ENGINEERING NEWS-RECORD

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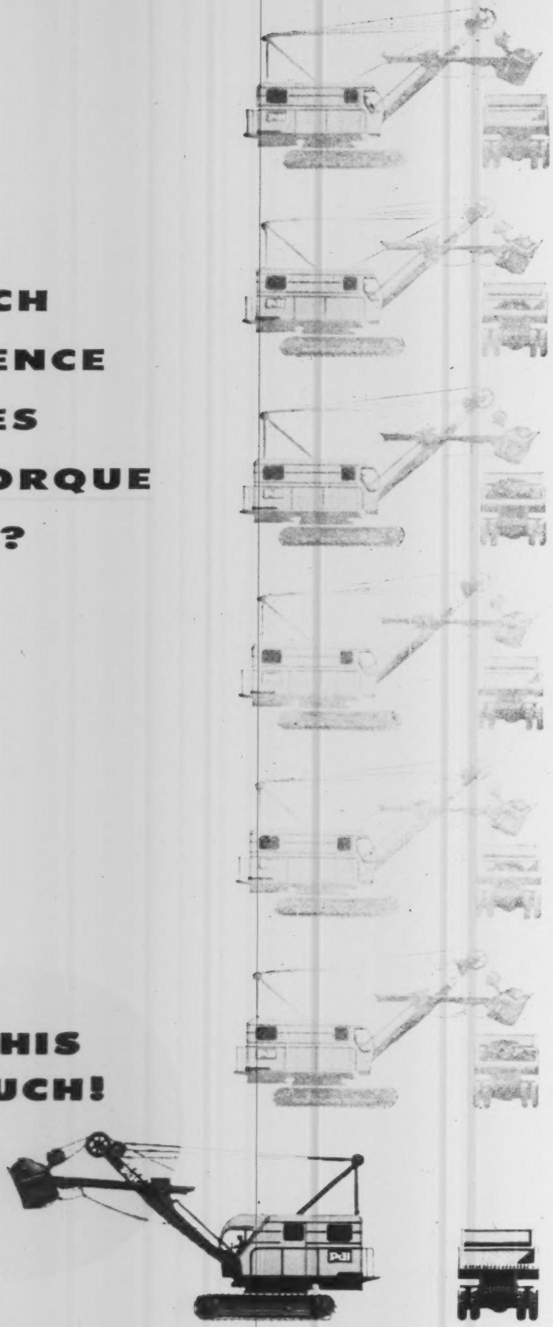
NSTRUCTION
MEMBER
ASSOCIATED GENERAL CONTRACTORS
KANSAS

M. Clare Miller: A builder's builder *p.86*

A McGRAW-HILL PUBLICATION

HOW MUCH DIFFERENCE DOES MAGNETORQUE MAKE?



THIS MUCH!

EVERY 7th WORK CYCLE IS "ON THE HOUSE" with Magnetorque-equipped P&H. Fast swings and smooth control slice 15% off usual cycle time . . . give *seven* loads in the time other machines produce *six*.

Magnetorque—a patented P&H electro-magnetic system—is more than just a superior clutch. It's a complete departure from conventional designs . . . employs magnetic force instead of friction to control swings. No adjustments, no overheating. There are no linings—so there is no downtime for lining replacements. The only maintenance with Magnetorque is the replacement of inexpensive carbon brushes every few years.

Magnetorque belongs to P&H—you can't get it on any other make of machine. If you could, it would cost you a minimum of $5,000 extra. But it's another of the *standard* bonus features that are part of the bargain with a P&H. Write for more information and special booklet on Magnetorque.

HARNISCHFEGER P&H
Milwaukee 46, Wisconsin
CONSTRUCTION & MINING DIVISION

360
ALLIS-CHALMERS

GET POSITIVE PENETRATION AT CUTTING EDGE

The new, all-hydraulic TS-360 is the only motor scraper in the 30-yd class with double-acting bowl jacks that provide 2-way power for faster loading, more cutting control.

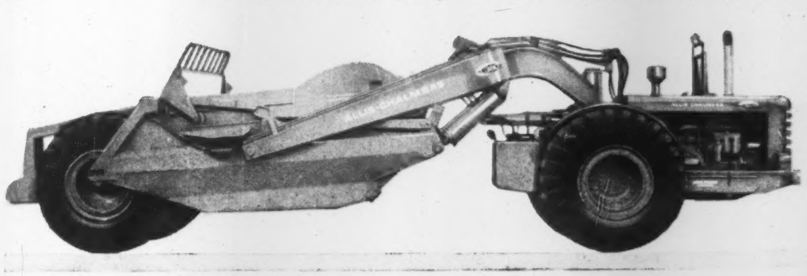
The TS-360's exclusive hydraulic down pressure penetrates quickly into the toughest-loading materials. Penetrating force like this—along with Allis-Chalmers original low, wide bowl—gives you fast, heaped loads every pass.

Slope-cutting is another good example! "Cornering-in" with bowl down pressure lets your operator sink his bit *when* and *where he wants* . . . lets him maintain the best cutting depth while loading. The result: Clean, accurate slopes.

Positive penetration is only one reason you'll get top performance on any size job. *Two-stage steering—forced ejection and highest apron lift—90° steer and* Kon-Tork *differential* are earth-moving advantages you cannot afford to overlook.

Put this new 340-hp TS-360 to work for you. Move more dirt per dollar invested than ever before. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Kon-Tork is an Allis-Chalmers trademark.



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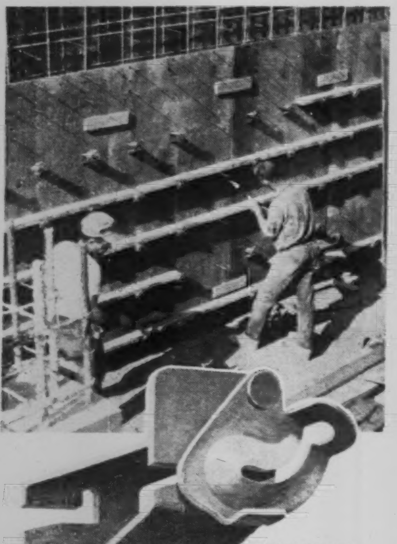
Jahn Bracket System



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(Also Type B; without eccentric for use with Tyholders)

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- Reduces costly multiple accessory parts—only one-piece Jahn Waler Bracket used with Richmond Snap-Ty.
- Reduces prefabrication and nailing.
- All panels, Walers and Brackets are reusable.

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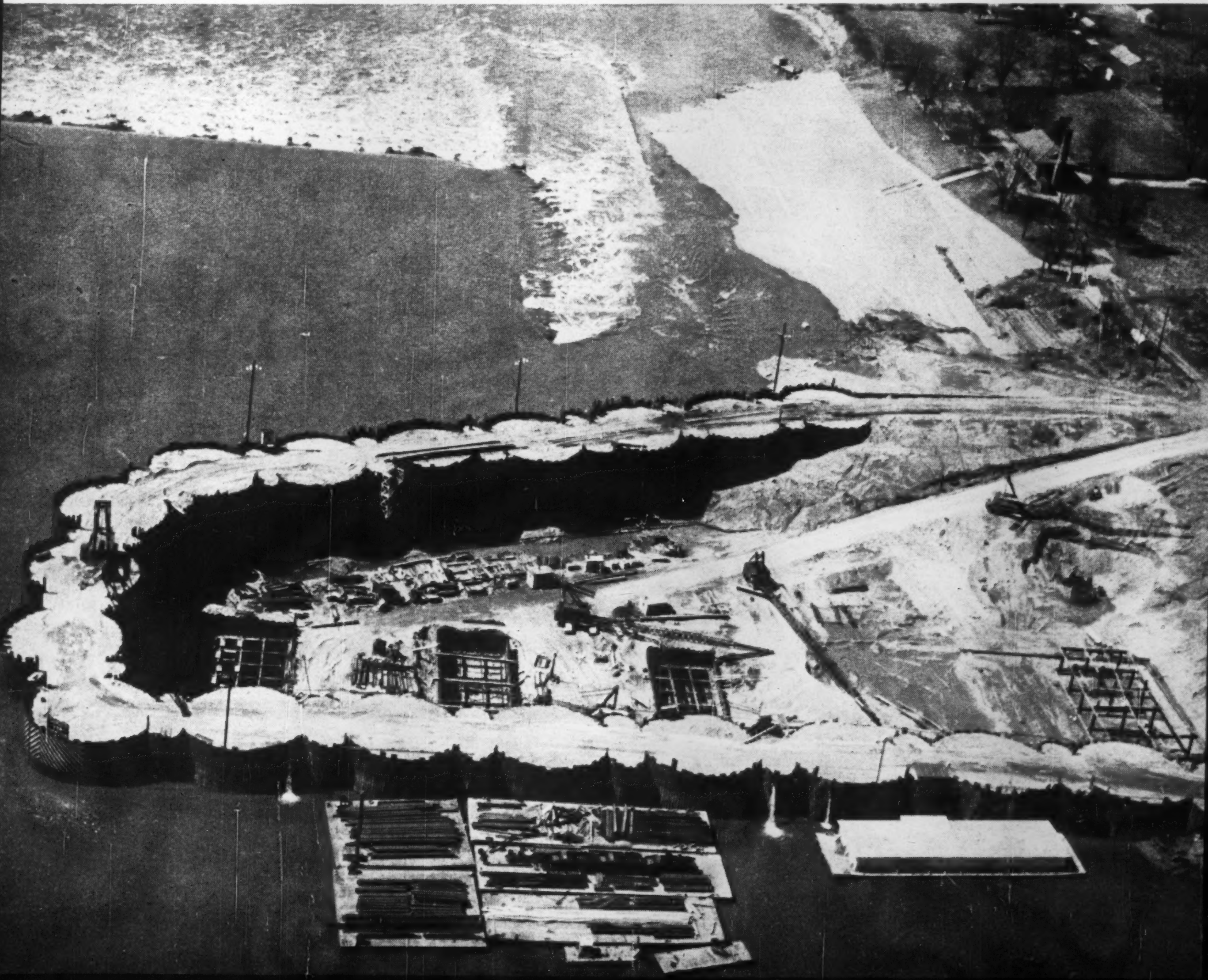

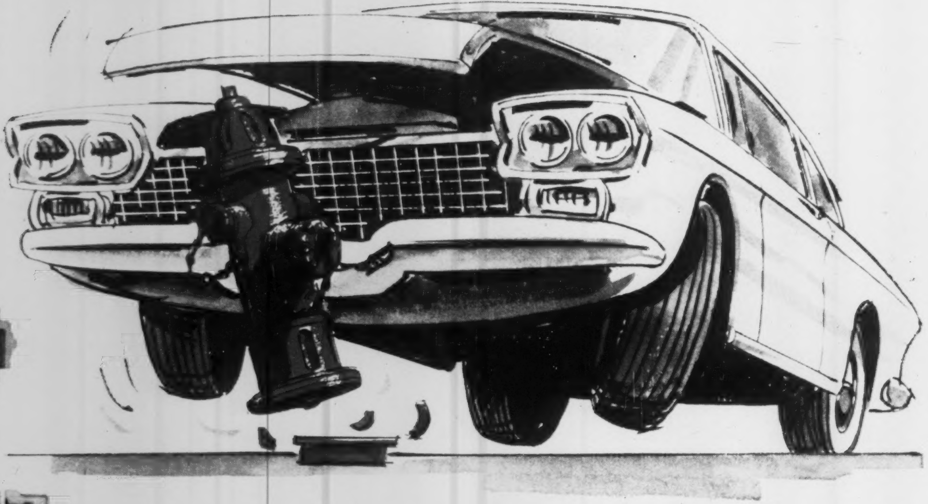

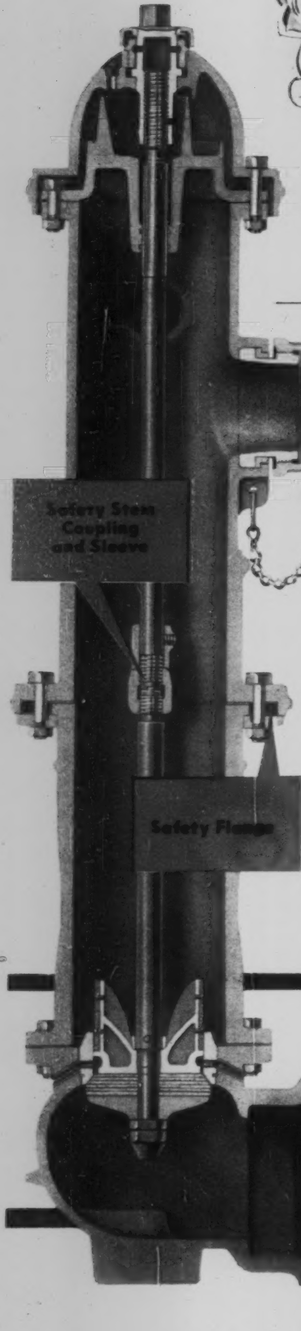
Safety Stem Coupling and Sleeve
Safety Flange

repair hydrant traffic damage FAST

...without loss of water...without water shut-off...without digging

The Mueller AWWA Improved Fire Hydrant is quickly put back into action when knocked over.

Mueller's Safety Flange design prevents breakage of the hydrant barrel and bent or broken operating stem. Hydrant safety mechanism snaps off cleanly just above the ground line.

The compression-type main valve stays closed. No water is lost to affect pressure at neighboring hydrants. No damage is caused by flowing water. Lower stem section is held solidly in place to permit easy repair without digging.

The simple, inexpensive repair kit shown below contains all parts needed to completely restore hydrant to service in a matter of minutes.

Safety Flange Repair Kit

Consists of safety flange, safety stem coupling, safety flange gasket and can of Mueller hydrant lubricating oil.

Write for complete information and specifications.

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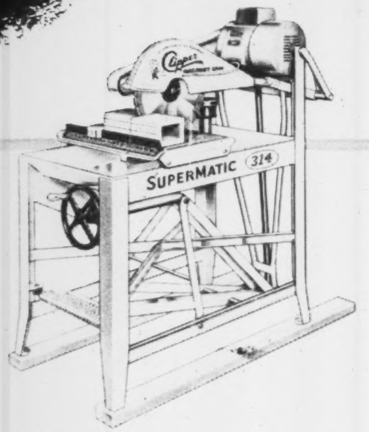
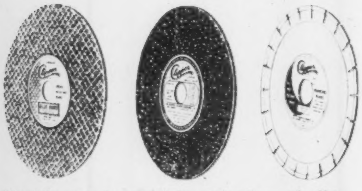


Model SM 314, 14″ Hi-Speed SuperMatic . . . one of several models from $335.



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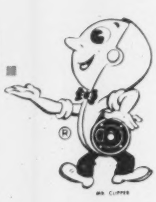


FACTORIES: AUSTRALIA, ENGLAND, FRANCE, GERMANY, ITALY

265X

Reader Comment

Technicians vs Engineers

SIR—To Dean Stith's comments (ENR Oct. 20, 1960, p. 7) and Edward K. Bryant's reply (ENR Feb. 2, p. 10) a few more lines could be added. For years the educational system in Scandinavia has provided for the education of a "technician" in all phases of engineering.

The requirements for a technician are from six to 24 months of experience and practical work in his field and two years of college. He then gets his "Technician's Degree."

The engineer, however, is educated along different lines. After from 0 to 12 months of experience he attends university (or college) for four to 4½ years whereupon he gets his "Engineer's Degree," corresponding to a bachelor's degree.

Any person who confuses a technician with an engineer in Scandinavia is apt to get a reply very much to the point. Mr. Bryant is absolutely right—whether in the U. S. or Scandinavia or any part of the world, a technician is not an engineer and vice versa and the two terms should not be confused.

ODD BUNES
Iowa State Highway Commission
Britt, Iowa

Misstep on Gowanus

SIR—Regarding your article concerning the reconstruction of a portion of the Gowanus Parkway (ENR Feb. 9, p. 40), we should like to bring to your attention that the Bethlehem Steel Co. is not handling the project in three steps. Instead, they are constructing five-sevenths of the new structure parallel to the old. We, the Anchor Demolition Corp., will remove the old parkway section, and they will complete the new expressway section.

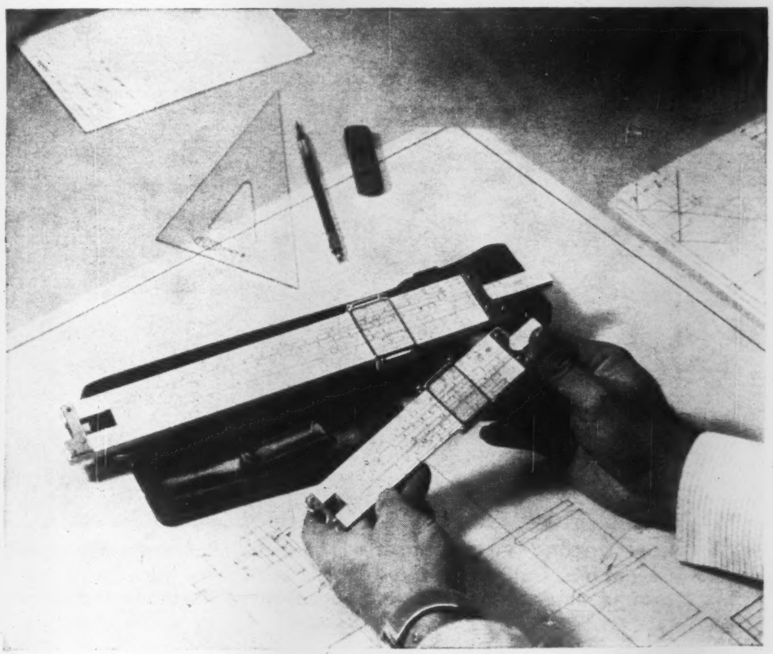
The demolition itself consists of more than one operation, because a five-block section of concrete deck, facia, and a portion of the structure had to be cut away to permit the erection of a portion of the new structure. This had to be done with a minimum of interference to traffic.

CARL S. FRIEDES
Anchor Demolition Corp.
Brooklyn, N. Y.

(*Reader Comment continued p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

DRAFTING TRENDS



This is a size comparison between the 10" POST Versalog and its 6" replica, the POST Pocket Versalog.

The trend to "COMPACT" slide rules

Why a small slide rule?

Users of America's best-selling POST Versalog, in the regulation 10" desk size, have been known to covet a 6" POST Pocket Versalog, and even buy one . . . as a more easily carried convenience . . . as a spare . . . or just for the sheer joy of having, like a gun collector, a "matched pair."

It took more than requests from pleased users of the 10" Versalog to convince our marketing people that the need actually existed for a premium-priced 6" pocket rule with 23 scales. Our technical men were even harder to convince that high Versalog standards of accuracy could be maintained in miniature.

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That there is a need has since been proved by the thousands of engineers, architects, scientists, and students who have bought and used a POST Pocket Versalog in preference not only to the larger version, but after comparing it with other smaller makes.

As to accuracy, we are still amazed at the exquisite job our production team has done in miniaturization—the 6" Pocket Versalog includes every one of the 23 scales found on its much larger counterpart and, in addition, bears engine-divided calibrations of such sharpness and clarity that no magnifier is needed.

Own a Versalog for less

To further popularize this fine instrument, POST dealers are offering it at a special low price for a limited time. All models come with a hand-crafted leather case and spring pocket clip. Also available with hard-bound instruction text.

For further information, ask your POST dealer. Or, for free literature, price data and name of nearest dealer, write to Frederick Post Company, 3654 North Avondale Avenue, Chicago 18, Illinois.

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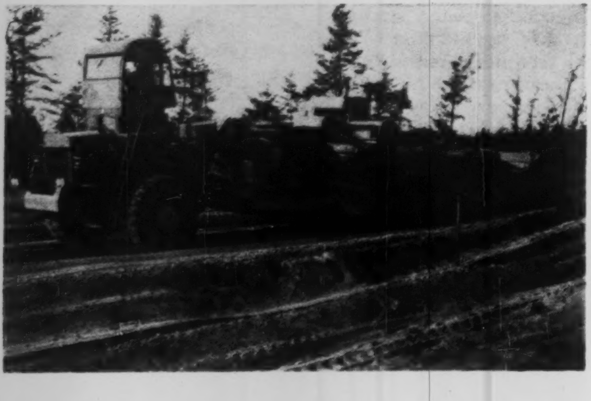
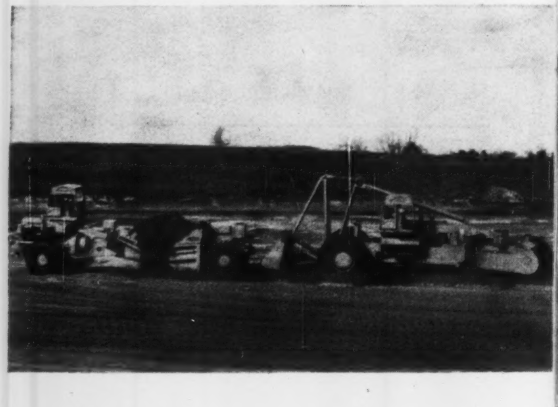
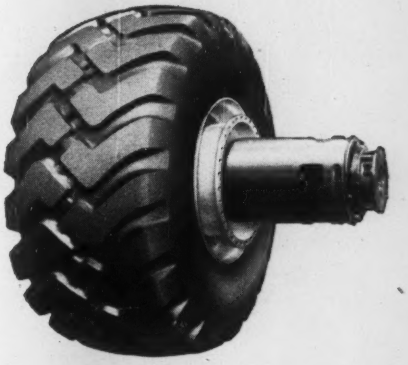
PACEMAKER SCRAPERS. This is a 60-ton capacity Series L-60 Electric Digger self-loading in a deep sand borrow pit. Electric drive inside each wheel eliminates pusher equipment where these scrapers work. (Also units with 30 tons and 140 tons capacities.)



PACEMAKER TRACTORS. This Series K-103 tractor does the work of two of the biggest crawlers in push-loading . . . 840 HP plus big wide-base tires. Maneuvers fast and travels same speed in both directions. (Both larger and smaller sizes also available.)





POWERFUL DC MOTOR AND GEAR REDUCTION in every wheel (or roller, in the case of Power-Packers) is the drive system for all PACEMAKER machines. Electric Wheel drive is simple — only an electric cable connects wheels to power source. Every component in this system is matched and balanced for performance in the system. All are designed and built by R. G. LeTourneau, Inc. expressly for the company's electrically powered and controlled equipment.

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This electric powered and controlled self-propelled sheepsfoot roller provides the ideal combination of mass and power for speedy, money-saving compacting.

You move no dead weight — every ounce goes into compacting. DC drive motors and gear reductions located inside each roller propel the machine. A single diesel-electric generating plant supplies the power.

Power-Packers have equal speed and power in either direction. Instead of turning the machine around, you merely spin a swivel seat and control console and you're away on another pass.

With 420 horsepower applied inside the rollers, these 40-ton machines work economically on the toughest fills. They operate on grades . . . climb in and out of core trenches and other "hard-to-get-to" places. Save at least a penny and a half per yard on compacting costs!

R. G. LeTourneau, Inc. maintains its own field staffs and deals directly with the user. For further information on these products, contact R. G. LeTourneau, Inc., direct.

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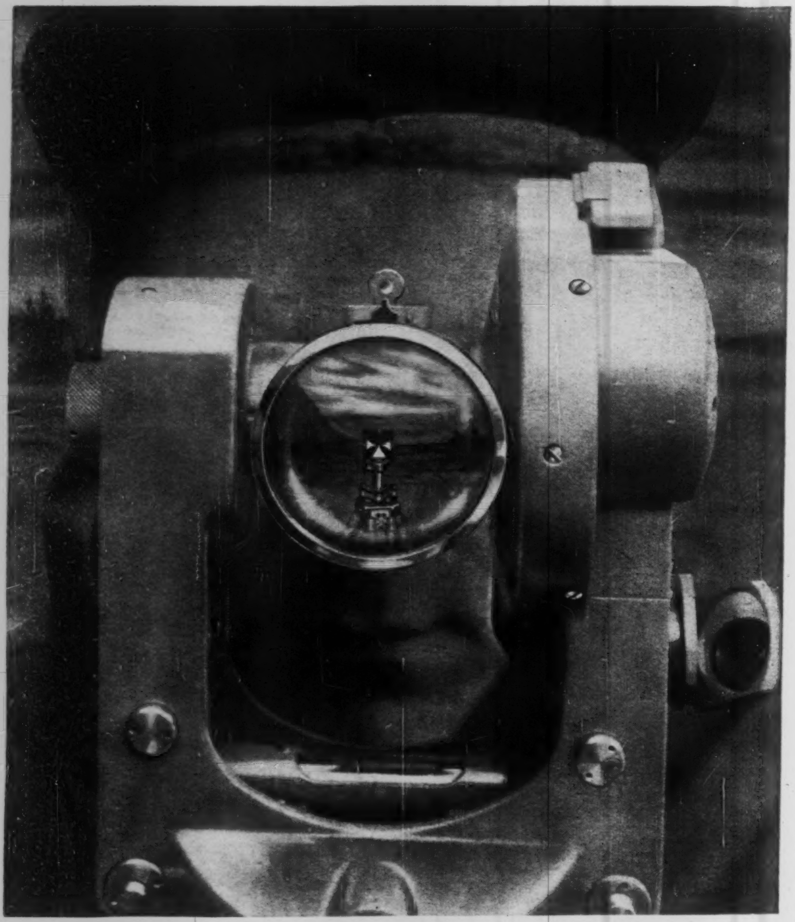

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High-Flying Crane

SIR—Your article entitled "Saturn's Gantry is World's Highest Mobile Structure" (ENR Jan. 19, p. 21) is most interesting, but the title is misleading, since the crane is not the world's highest mobile structure. During the period 1946-48, while I was stationed at the Long Beach Naval Shipyard, Long Beach, Calif., the Navy reerected a German self-propelled floating crane of 300-ton capacity.

My recollection of the height of this crane is that it was 375 ft from the water level to the tip of the boom. This being considerably higher than 310 ft, disqualifies the Saturn gantry crane as the world's highest mobile structure. No claim is made that the floating crane qualifies for first place.

JACK W. SCHWARTZ
Commander
Civil Engineer Corps
U. S. Navy

Correction

There were pictures switched on p. 33 of last week's issue. And a number upside down on p. 30 made the Seabees 16 years old instead of 19.

Mississippi Valley Conference of State Highway Officials, annual meeting, Edgewater Beach Hotel, Chicago, March 16-18. Write: E. S. Paterson, Director, Ohio Department of Highways, Columbus, Ohio.

Contracting Plasterers and Lathers International Association, Southwest conference, Roosevelt Hotel, New Orleans, March 17-19. Write: CPLIA Southwest Conference, Roosevelt Hotel, 123 Baronne St., New Orleans, La.

12th Western Metal Congress, Western Metal Exposition, American Society for Metals, Ambassador Hotel and Pan-Pacific Auditorium, San Francisco, Calif., March 20-24. Write: James C. Nelson, American Society for Metals, Metals Park (Novelty) Ohio.

American Society of Photogrammetry, annual congress on surveying and mapping, Shoreham Hotel, Washington, D. C., March 22-25. Write: Charles W. Culkin, 403 Orleans Circle, S. W., Vienna, Va.

Symposium on Ground Water Contamination, U. S. Public Health Service, Sheraton-Gibson Hotel, Cincinnati, Ohio, April 5-7. Write: Director, DHEW, PHS, Robert A. Taft, Sanitary Engineers Center, 4676 Columbia Parkway, Cincinnati 26, Ohio.

Southern Municipal and Industrial Waste Conference, Duke University, Durham, N. C., April 6-7. Write: Edward H. Bryan, Duke University, College of Engineering, Durham, N. C.

American Industrial Hygiene Conference, Sheraton-Cadillac Hotel, Detroit, Mich., April 9-13. Write: American Industrial Hygiene Association, 14125 Prevost, Detroit 27, Mich.

American Society of Civil Engineers, Phoenix convention, Hotel Westward Ho, Phoenix, Ariz., April 10-14. Write: William H. Wisely, Exec. Sec., 33 W. 39th St., New York 18, N. Y.

Working Conference on Urban Renewal, "Financing Considerations of Private Redevelopers," University of Pittsburgh, Pittsburgh, Pa., April 16-18. Write: National Association of Housing and Redevelopment Officials, Room 230, Transportation Building, 815 17th St., N. W., Washington, D. C.

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Regardless of the size or type you choose — separate engine, front PTO, or flywheel PTO — your Smith truck mixer is custom engineered to meet your specific job requirements.

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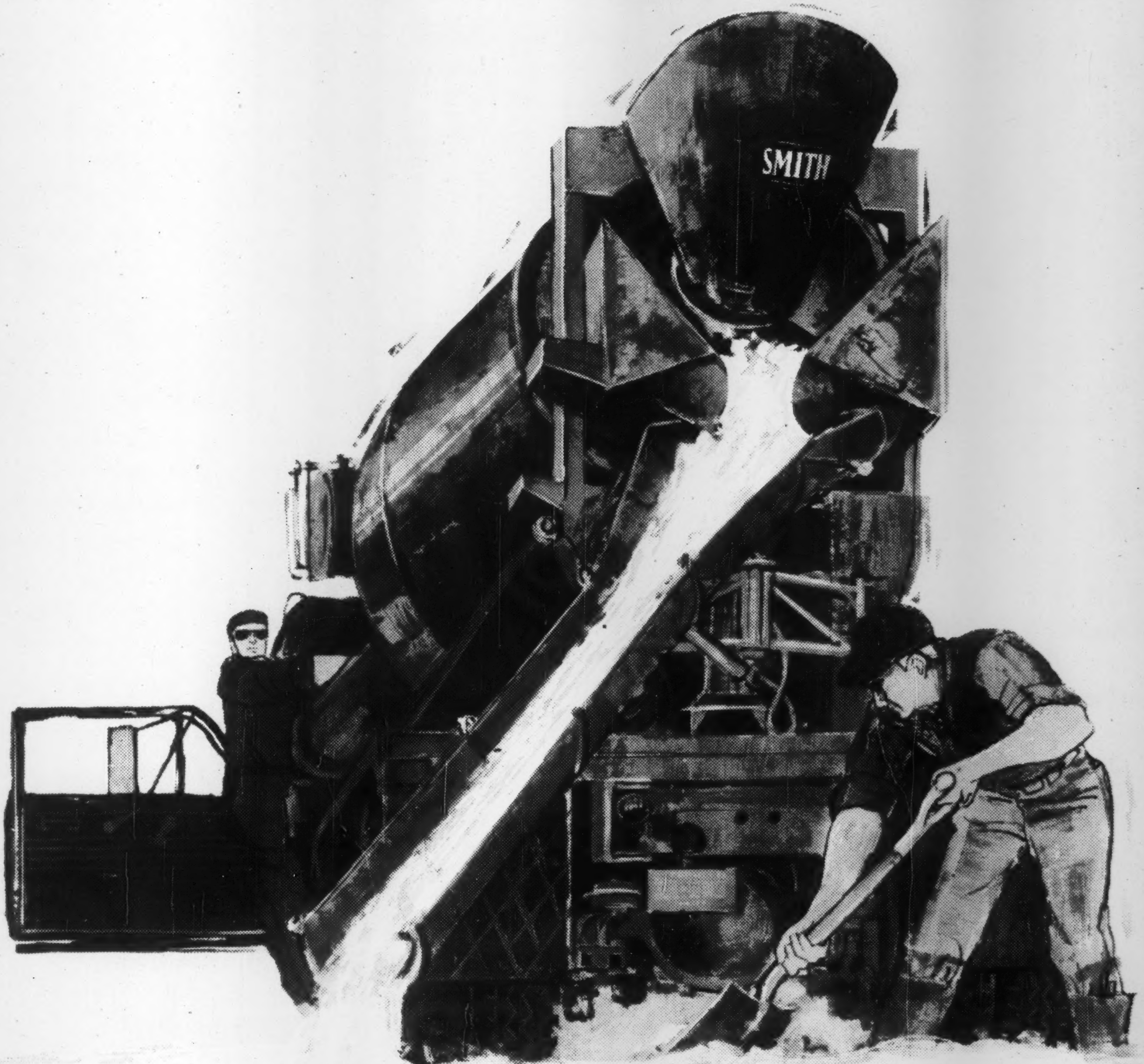
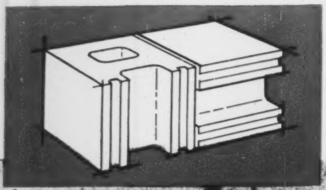
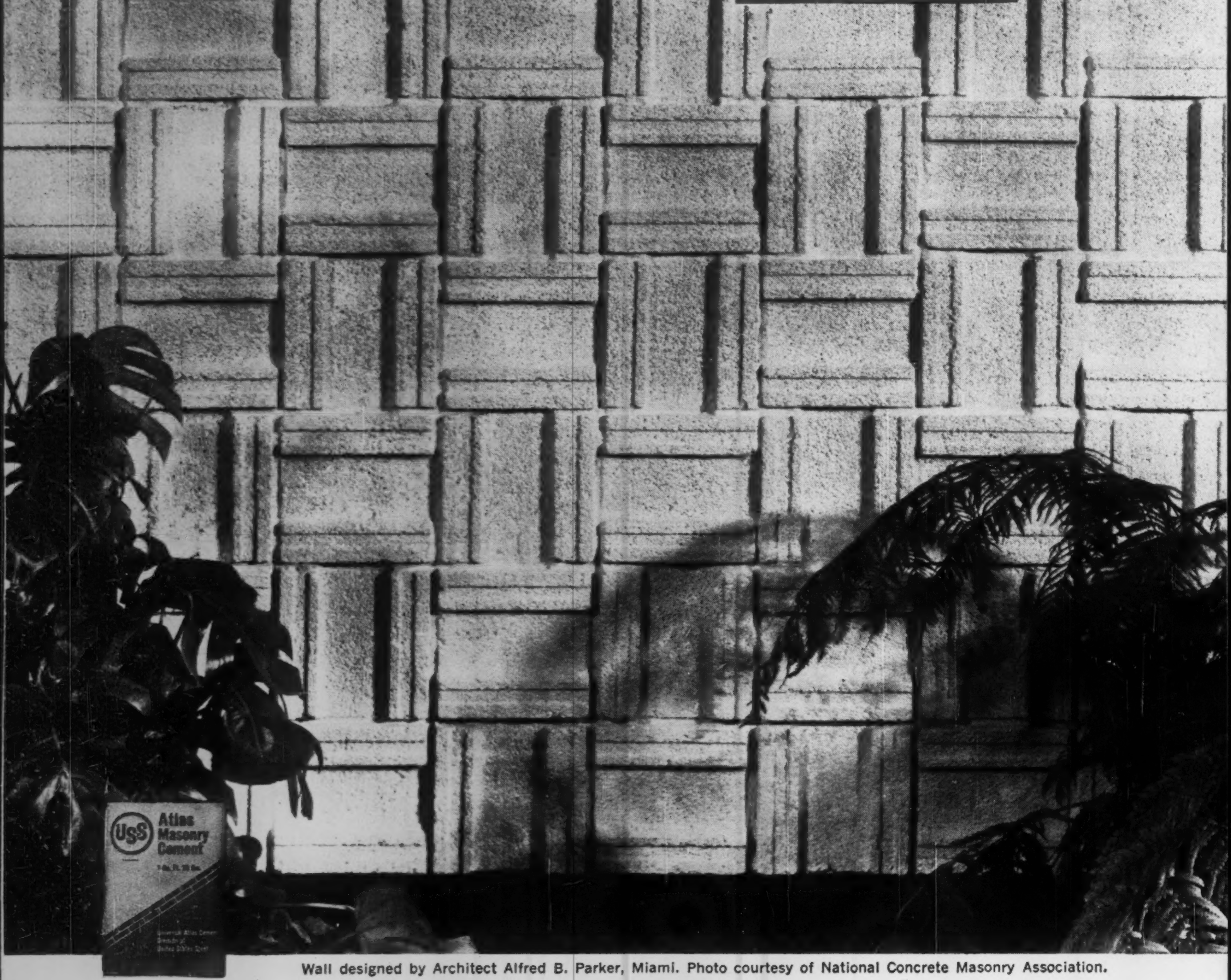


Great new things are shaping up in concrete block





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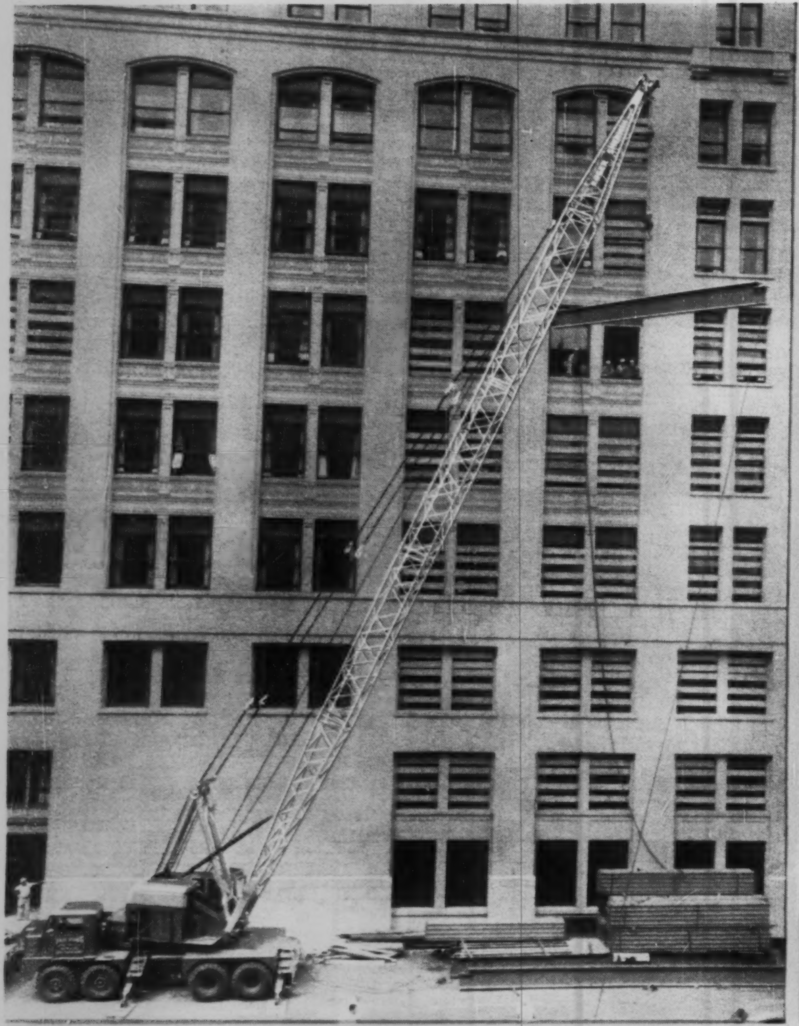

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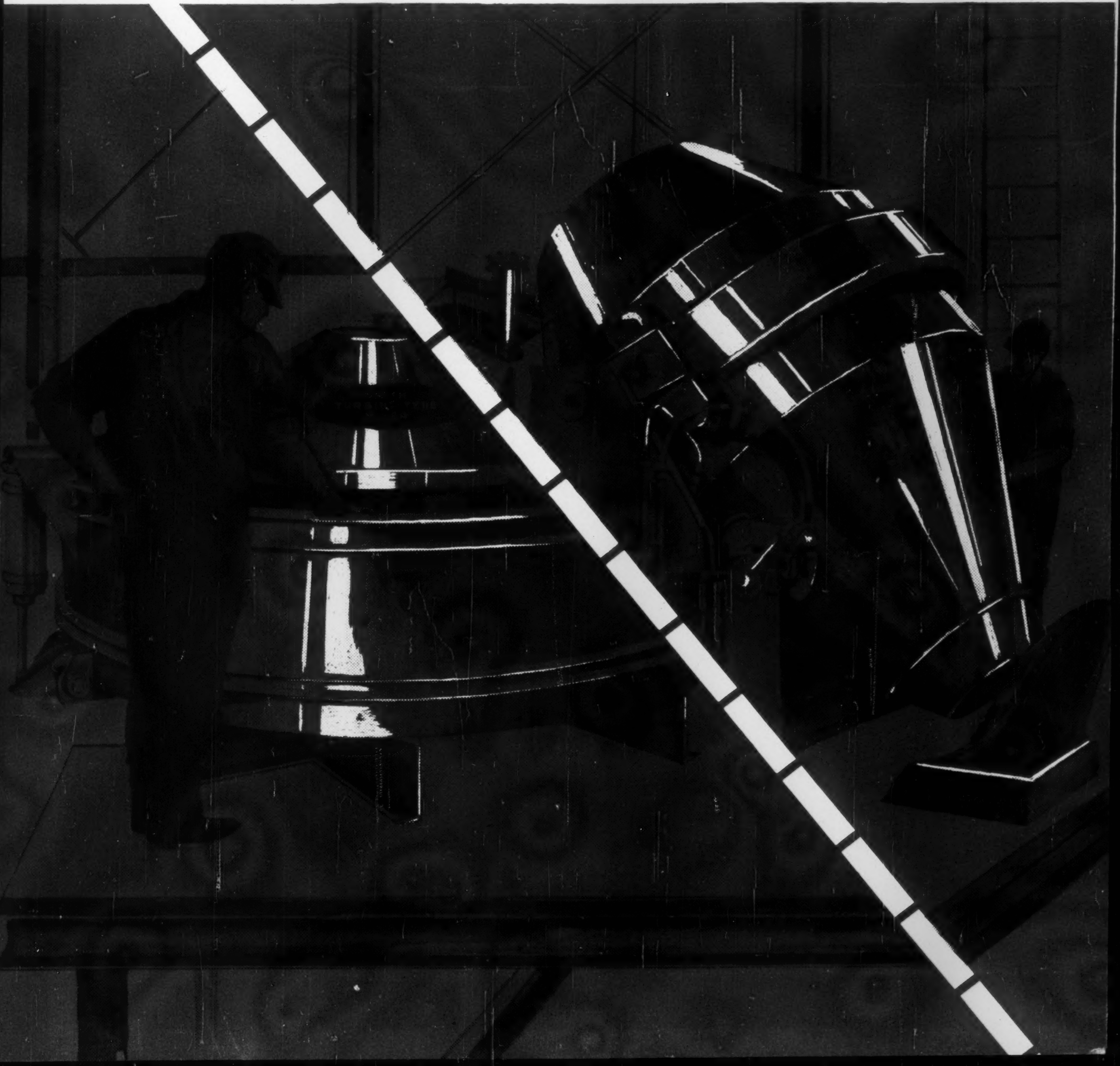

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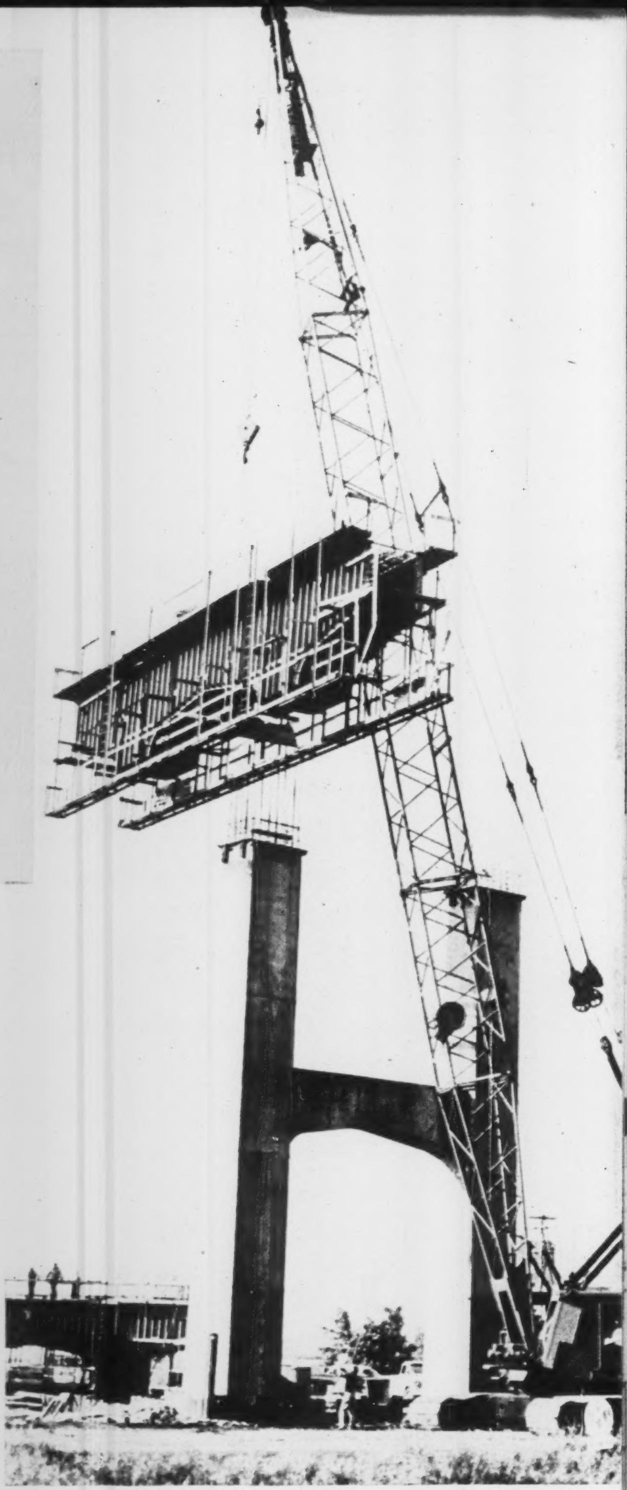

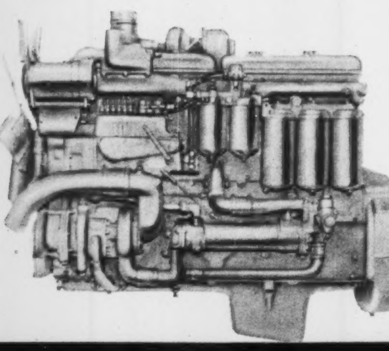

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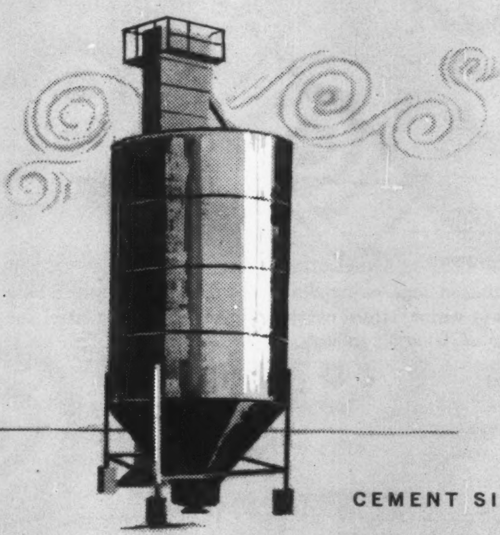

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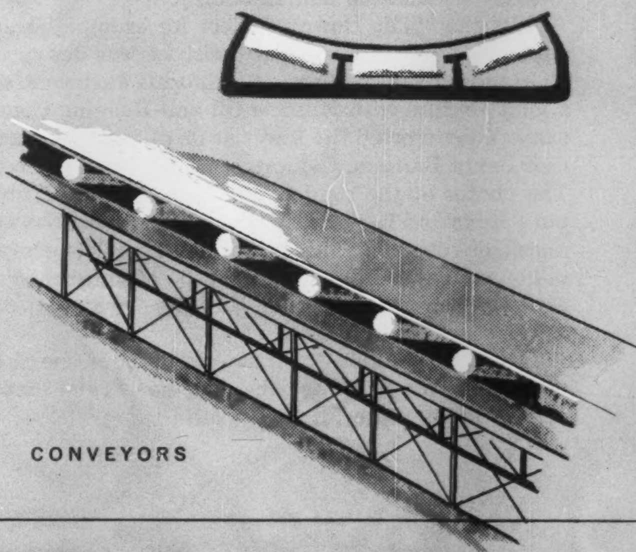

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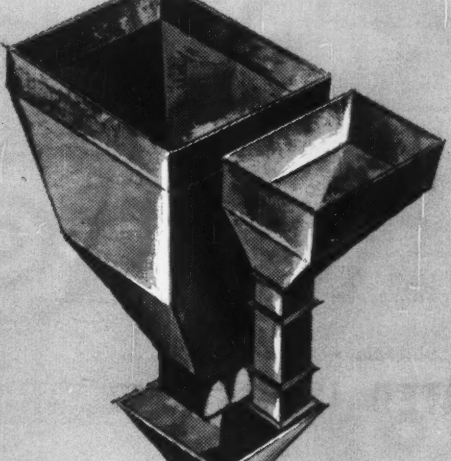

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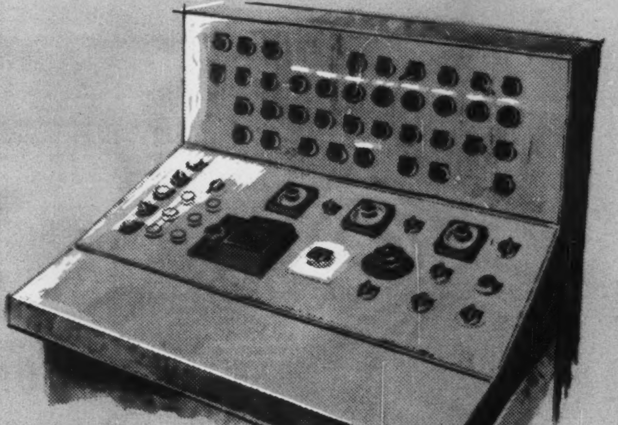

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Yuba Equipment Installation, Field Erection, Steel Construction and Bridge Building services are described in new Bulletin YSC260—available on request.

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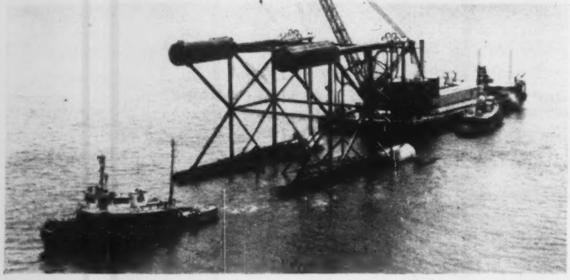
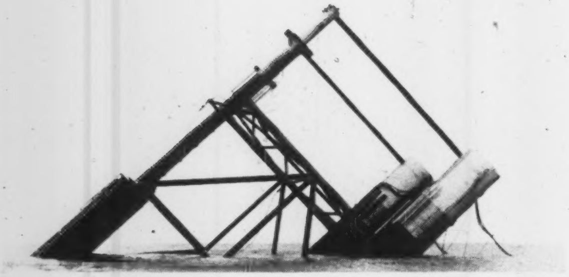
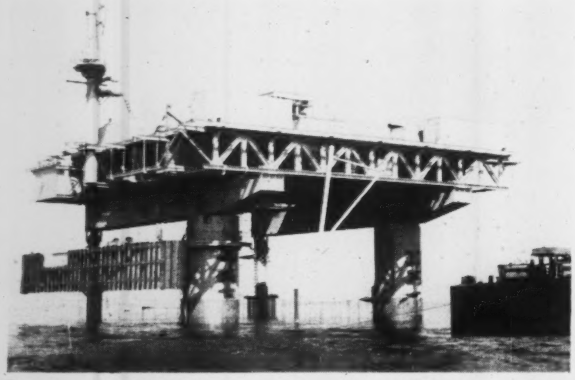


1 Tower base is towed to the site on its side, supported by two full-length pontoon legs. Derrick barge is used for erection of super-structure units.



2 Ballasted legs swing down to bring top of tower base out of water. Hoses carry compressed air to control the rate of flooding in legs.



3 Pre-assembled deck components, weighing up to 248 tons are placed by giant derrick barge. Yuba Erectors performed the entire offshore installation job.

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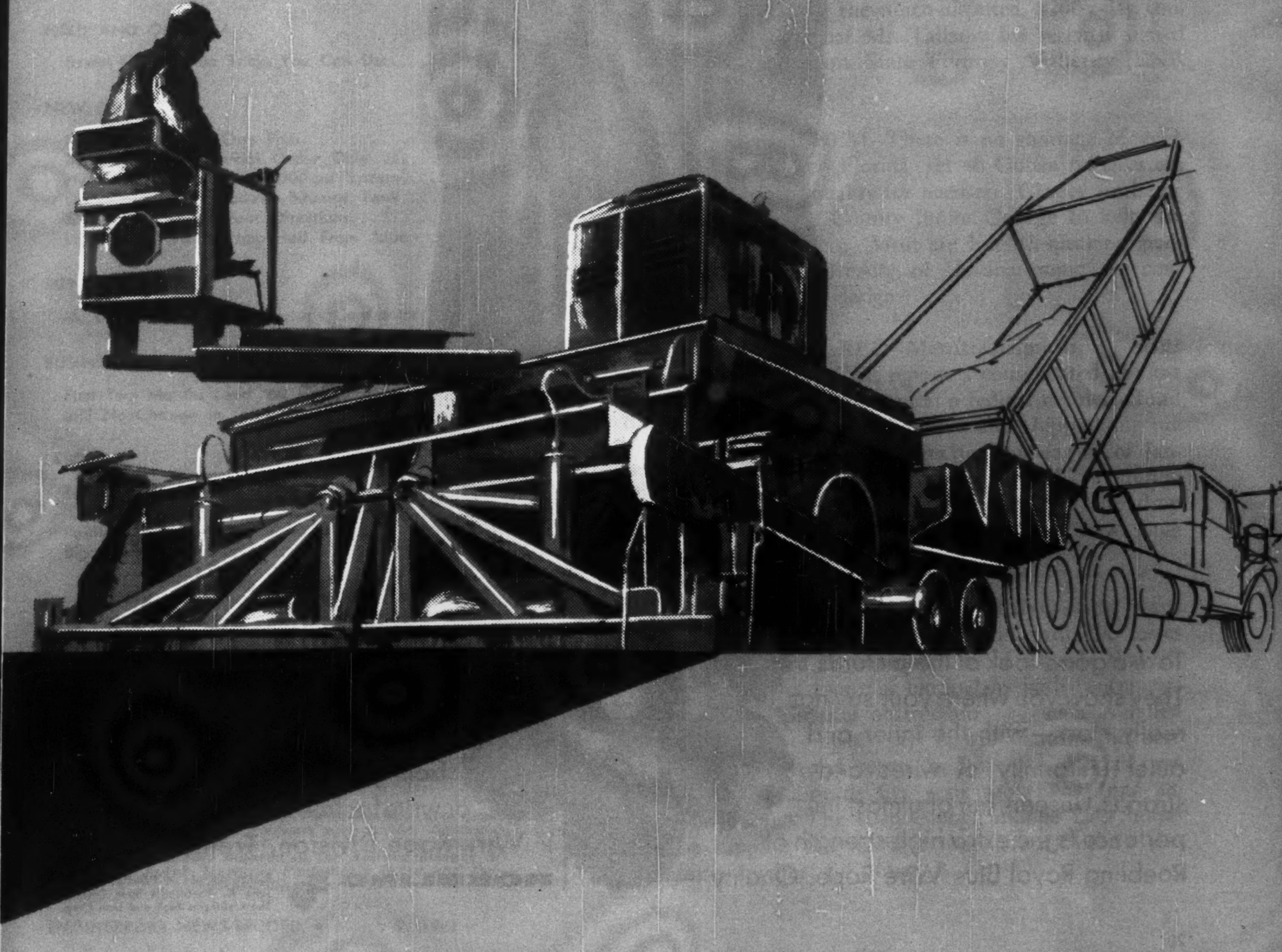

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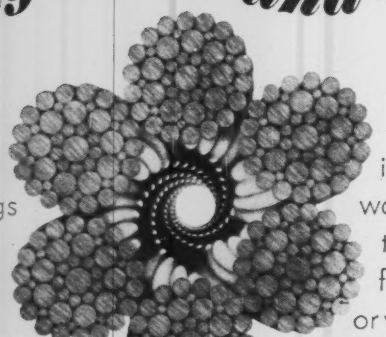

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ENGINEERING NEWS-RECORD

Vol. 166, No. 10 March 9, 1961

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THE CONSTRUCTION WEEK

FOR IDEALISTS ONLY—With construction of sanitary and irrigation works an important goal of JFK's new Peace Corps, young engineers will be among those ideally qualified for field work. But with the ideal qualifications you had best have a good measure of idealism—the Corps will operate in the most backward areas of the world, and compensation will amount to living expenses that will be determined on the basis of local standards.

CAUTIOUS OPTIMISM—The consensus of 50 top members of the National Association of Home Builders is that housing starts this year will rise 2%. Nat Rogg, association economist, anticipates a rise of as much as 3 to 5%. The gain is expected to show up in the second half.

A GOOD WEEK FOR TALLAMY—The American Road Builders Association, convening in Atlantic City this week, presented its first annual achievement award to former Federal Highway Administrator Bertram D. Tallamy. On the night before the award a bipartisan investigating committee in Albany, N. Y., described as legal the much-disputed, $200-a-day consulting contact that Mr. Tallamy has recently signed with the New York State Thruway Authority (ENR Feb. 23, p. 23).

FIDEL SENT THEM—There is no shortage of engineers in southern Florida, yet 40 Cuban refugees are brushing up to qualify for licenses. Classes are being offered by Dade County Junior College to help the displaced engineers. Most are English-speaking graduates of the University of Havana; some are considered experts in design.

MC&S IN THE RED—Merritt-Chapman & Scott Corp., New York City, reports a consolidated net loss in 1960 of $29.1 million after a federal tax net refund of $18.4 million. Construction and shipbuilding are largely responsible. Construction backlog as of January 1 was $179 million compared to $239 million on January 1, 1960. The company says the drop reflects "redoubled prudence in bidding new long-term construction . . . contracts."

TUNNEL TROUBLE AT KEMANO—New tests showing an "abnormal increase" in hydraulic losses have convinced Aluminium Co. of Canada that its Kemano power tunnel is blocked by both "entrapped air" and a "physical obstruction . . . such as fallen rock." The company says it will dewater the bore for inspection and repair in June. A rockfall was first suspected nearly five years ago (ENR June 28, 1956, p. 24). The 10-mile-long, unlined 25-ft horseshoe supplies the turbines that power Alcan's aluminum smelter at Kitimat, B. C.

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WASHINGTON OBSERVER

- **Dulles air terminal: Agonizing reappraisals?**
- **More help for housing?**
- **Speedup in post offices**

- **The revolutionary air terminal under construction for Dulles International Airport—the one with the bay of "mobile lounges" for taking the walking out of flying—is being studied** by the Kennedy Administration. Federal Aviation Administrator Najeeb Halaby has ordered an independent appraisal of the building's design, construction and costs of the ultra-modern air gateway to the nation's capital.

Making the reappraisal are Francis P. Fox of the Los Angeles Department of Airports, Thomas Sullivan of the Port of New York Authority and George de Ment, Chicago Public Works Commissioner. They already have told Mr. Halaby that Dulles will miss its July, 1961, completion date by at least nine months and will cost more than $100 million, instead of the original $87-million estimate.

The study group has raised serious questions about the mobile-lounge concept in the design of architect Eero Saarinen and consultants Ammann & Whitney. The committee is wondering if the lounge isn't basically a bus with frills that will cost too much for the service it will provide.

But no change in the basic concept is likely, says Boyd Anderson, Ammann & Whitney partner assigned to the Dulles project. He reasons that work on the airport is too far along to permit radical changes. The worth of the mobile lounge can't be proved until it's used, he says, and he's convinced it's the best solution.

—

- **Further measures to stimulate the housing industry may come from Washington after President Kennedy's mid-April appraisal of the economy.** That's the word from Walter W. Heller, chairman of the President's Council of Economic Advisers. He testified this week before the Joint Congressional Economic Committee.

Housing has not helped sustain the economy as it did in the three previous post-war recessions, says Mr. Heller. He notes with considerable alarm that inventories of unsold new houses are "significantly" higher now than they were in early 1959.

But he discounts the view that the market is so glutted that it will not respond to lower interest rates. Rates should have fallen more than they have in light of economic realities, he says. Moves to lower such rates probably will be the number one federal goal if an upturn is not in sight within a month or two.

Mr. Heller sees the possibility of an upturn by mid-year. But if it is mild, he says, the U. S. will face a "very stubborn" kind of economic drag. In such a case, his view is that efforts to stimulate housing and other industries will be necessary.

—

- **About 2,000 new post offices are involved in a construction speedup program announced by the White House.** Pending letting of contracts, the locations are kept secret to prevent undue land speculation.

The program involves $270 million worth of post office construction that was to have been initiated in the next 18 months. As an anti-recession measure, the White House hopes to get the work under way in the next 10 months. Most of the money comes from private sources, with the federal government renting completed buildings.

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Competition Is Perennial Problem

- **AGC members hear what they suspected—gross profit margin in construction is too low.**
- **Although higher volume is coming, competition will stay high too, keeping bids down.**

More than 1,200 of the nation's most competitive businessmen met in Boston last week to take a close look at the problems that will beset them in coming months. The occasion was the annual convention of the Associated General Contractors of America.

High up on the list of topics for discussion on and off the rostrum was competition—it's tough, and no one expects it to get much easier this year.

AGC expects that the highway contractors will have to live with the existing competitive situation for all of this year at least. This will leave the highway people in the same position as the rest of the industry, for building and heavy contractors too are working in a cut-throat market.

Although each one in the business knows the extent of the scramble for business, it was a financial expert—George E. Keefe, vice president of Dun & Bradstreet, Inc.—who gave the most graphic picture of the situation as it exists over-all.

He said that while construction volume during the 1950s was very high, competition was "never more intense."

"With the narrowing of profit margins we have seen sharp upturns in the number of business failures in the industry, notably since 1955," Mr. Keefe said. He pointed out that 16.8% of all business failures in 1960 were in construction, but the industry represented only 10% of the total business population. "More importantly, total construction failure liabilities for 1960 comprised 21.4% of liabilities recorded from all business failures," he said.

According to Mr. Keefe "construction contracting operates at among the lowest gross profit margins in all industry."

Because competition has severely narrowed profit margins, Mr. Keefe said, it is no "rarity to find contractors submitting lump-sum bids at 5% above cost or less. In some cases, contracts are bid without profit to keep crews and organization together until a more profitable opportunity comes along. And in other instances, contractors have bid at abnormally low margins in the hope that, upon being awarded the contract, ensuing change orders and extras would produce profit opportunities."

Although Mr. Keefe considers overextension the greatest single contributing factor in failures, he said it is not the sole determining factor: "In many instances overextension is present in combination with other contributing causes. And showing up very strongly as other factors are inadequate financial records, lack of adequate financial controls, speculating in outside ventures, inadequate investigation of the resources of a client, and personal traits and weaknesses."

As a proposed remedy, Mr. Keefe suggested the substitution of the "fair bid" for the "low bid," but conceded that private owners would be more likely to accept the "fair bid" than public agencies. In either case, however, the concept "would undoubtedly require a long period of promotion and selling on the part of the construction industry."

(AGC may have a good opportunity to push the idea in federal government circles, as a result of the Capehart housing fiasco involving Hal B. Hayes, Los Angeles, which saw $47 million worth of military housing stalled since May 1960. The government is expected to invite competitive proposals from selected builders, with the award of completion contracts probably to be based on negotiations.)

Individually, the contractors tell of competition that cuts profit to the bone, leaving no room for a mistake in the field or an adverse quirk of nature.

Because of this, contractors, generally are going to move with caution before buying machinery. The job will have to be in the bag, and then most intend to appraise their inventory and its condition carefully before committing themselves to heavy purchases. Equipment is not in short supply, and many contractors reported that they not only have enough to meet their own needs, but also enough to rent to competitors who won a contract.

They generally agree that equipment bought in recent years is extremely productive and rugged beyond any earlier expectations. A key to this long-wearing quality may be close attention to preventive maintenance. One heavy-highway man summed up the lengthier preventive maintenance reflections of several other contractors with: "We're a nut on it and we let our job superintendents know it."

Although it was generally agreed that the volume of work this year would probably rise over last year, the specter of continued intense competition put a damper on optimism. More than one contractor indicated that his volume might rise, but not necessarily his profits.

Walter Scott of F. L. Scott Co., San Antonio, Tex., building contractors, said this year looks good. "A large number of contracts of $1 million or more are scheduled for award this year, a good situation for us because we are able to take on that kind of work. Now we won't have to fight for the under-$500,000 contracts—the ones that really drag in the competition. Just recently we were invited to bid for a $350,000 building and we expected only six to eight others to be competing. When we went to the opening there were 116 bidders for that one contract."

Floyd S. Oldt, of the Dallas highway construction firm of Oldt Construction Co., said he expects a pretty good pickup in available work, but "chances are good that I'll still be bidding against a regiment of firms."

Building contractors from Philadelphia and Kansas City also reported that they expected an increased flow of new work. One from Philadelphia added, "There will also be a larger number of companies after the work, too. I sure wish I knew where they come from. Under rocks, maybe."

Of the score of contracting executives checked, only one expected that competition would drop off slightly. Ray E. Ritchie of Boso & Ritchie, a highway and heavy construction company based in Ravenswood, W. Va., said last year competition was extremely keen, "but this year I think volume will increase while competition will drop—not much, maybe, but at least it's a drop."

And along with most of his colleagues, he said that it would have an unusually big volume before he would be ready to buy equipment. "We're re-

. . . Contractors applaud JFK's road financing plans

placing machinery as usual on a pretty regular basis, but that is all. We've plenty of good equipment on hand, and I don't consider any of it obsolete."

Because contractors are operating in an era of rising costs and diminishing profit margins, they were warned that to remain in business, they must have complete understanding of construction equipment capabilities and the cost factors involved. "It can mean the difference between profit or loss on many construction projects," said Arthur R. Bodine, vice president of Grantwood Contracting Co. of St. Louis.

Mr. Bodine said that to figure the cost of machinery on a job accurately, his company maintains a two-part daily job report: one for the listing and allocation of employees' time and the other for listing and allocation of equipment.

Each piece of equipment owned by the company is given a code number, which is retained through the life of the unit. This number is then entered on the equipment column of the job report, which contains information on the following:

- Time worked and at what operation.
- Time repaired and by whom.
- Time idle and reason for its being idle.
- Remarks on repairs or other pertinent information.

As the information comes into the office, management appraises it and takes steps necessary to correct situations that may be slowing the job and costing money, that is not buying production.

Mr. Bodine said that the system not only provides a constant cost picture on a job, but the information later provides an historic base that can be used to bid jobs that may be similar to those completed.

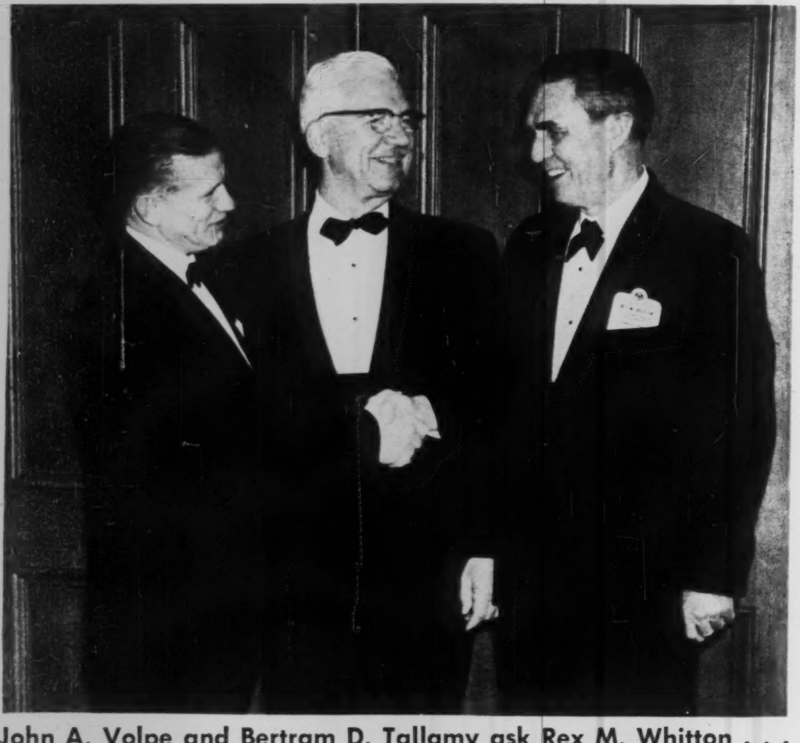
Biggest news of direct interest to the industry was not made at the convention, however. It came from Washington in the form of a special highway message to Congress from President Kennedy (ENR Mar. 2, p. 22). It was good news, enthusiastically received. But some association officers are worried about what may happen in Congress. They are fully aware that aligned against the $9.7-billion proposal to keep the Interstate Highway Program on schedule are some of the nation's most powerful business and labor groups—petroleum, truckers and the teamsters. Contractors are hoping for quick passage of the measure in full, for without such action the industry would operate on a roller-coaster basis—up when funds are available, down when they aren't.

In face of the Byrd amendment requiring that the system be kept on a pay-as-you-go basis, the industry wants enough funds provided to keep the flow of work level through 1972. The program is scheduled for completion then, but for those who want to look ahead, there was an interesting prediction from George H. Fallon (D., Md.), chairman of the House subcommittee on roads. He said that by 1972, chances are good that the system will only be meeting needs of that day, so the nation may well have to start another highway program as vast as the one under way.

Rep. Gordon H. Scherer (R., Ohio), ranking minority member of the House subcommittee on roads, had good words for the conduct and administration of the program. He said that despite the information disclosed by recent highway investigations, the program is "one of the cleanest programs Congress ever investigated."

He added, however, that a watchdog committee should be maintained so that wrong-doing will be kept at a minimum: "It will help prevent enemies of the program from seizing upon everything that may be discovered otherwise and blowing it up beyond all proportion."

Mr. Fallon also affirmed his belief in the administration of the program. Asked if he thinks the Interstate is being built with "too many frills, too many complex interchanges, and too-wide median strips," he replied in the negative. Mr. Fallon said his committee "has complete confidence in the officials and administrators hardling the job. The cost of the system per vehicle-mile makes this a very cheap public works program."



John A. Volpe and Bertram D. Tallamy ask Rex M. Whitton . . .

'So, What's New On the Job?'

The three men who have held the post of Federal Highway Administrator—John A. Volpe, Bertram D. Tallamy and Rex. M. Whitton—exchanged views of the national highway program during the AGC convention in Boston.

Mr. Volpe, immediate past president of AGC and governor of Massachusetts, held the post on an interim basis for a few months following passage of the 1956 Highway Act.

Mr. Tallamy, formerly chairman of the New York State Thruway Authority, served nearly four years in the Eisenhower Administration. He is now a consulting engineer (ENR Feb. 23, p. 23).

Mr. Whitton was chief engineer of the Missouri State Highway Department until tagged for the top federal highway job by the Kennedy Administration.

Work Trestle Bows to Ohio River

While many rivers rampaged in the South last week leaving thousands homeless and causing damage in the millions, the Ohio River, without even reaching flood stage, managed to leave one contractor minus a construction bridge and two big gantry cranes.

At Greenup, Ky., site of the Corps of Engineers' Greenup Lock and Dam, Massman Construction Co. lost two steam-powered gantry cranes with 125-ft booms when 350 ft of a plate girder construction trestle gave way to the rushing waters.

The second-stage cofferdam (top foreground) had been pulled and the four completed bays of the gated navigation dam were running full with the gates raised. The night the bridge let go, Massman had steam up in one crane and a crew was clearing trash from under the bridge and around the piers.

Two men managed to climb to safety but a third was swept free of the wreckage and rode a tree for six miles before rescuers reached him.

Both cranes were near the end of the trestle at the time of the accident and one landed on the cells of the third-stage cofferdam. This cofferdam runs from the completed midstream pier to the lock wall (bottom, background). It had been flooded intentionally, as were most of the cofferdams on the other Ohio River projects.

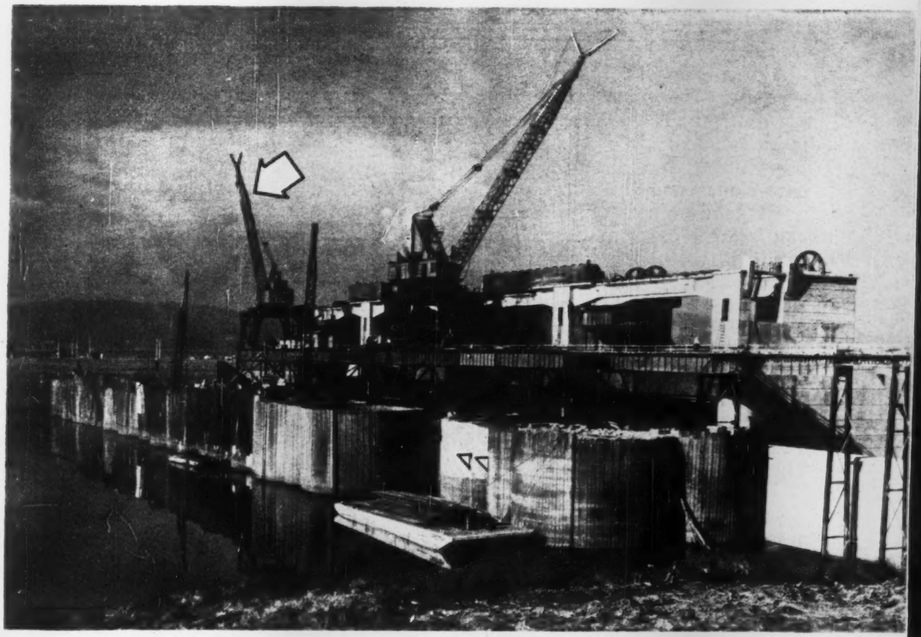
The trestle's bents stood just upstream of the concrete piers of the dam. The steel bents were anchored to concrete piers doweled into rock that had been the floor of the cofferdam.

A damage estimate was not possible immediately since the Ohio didn't crest just above flood stage until four days after the collapse. The position of the other crane was anybody's guess.

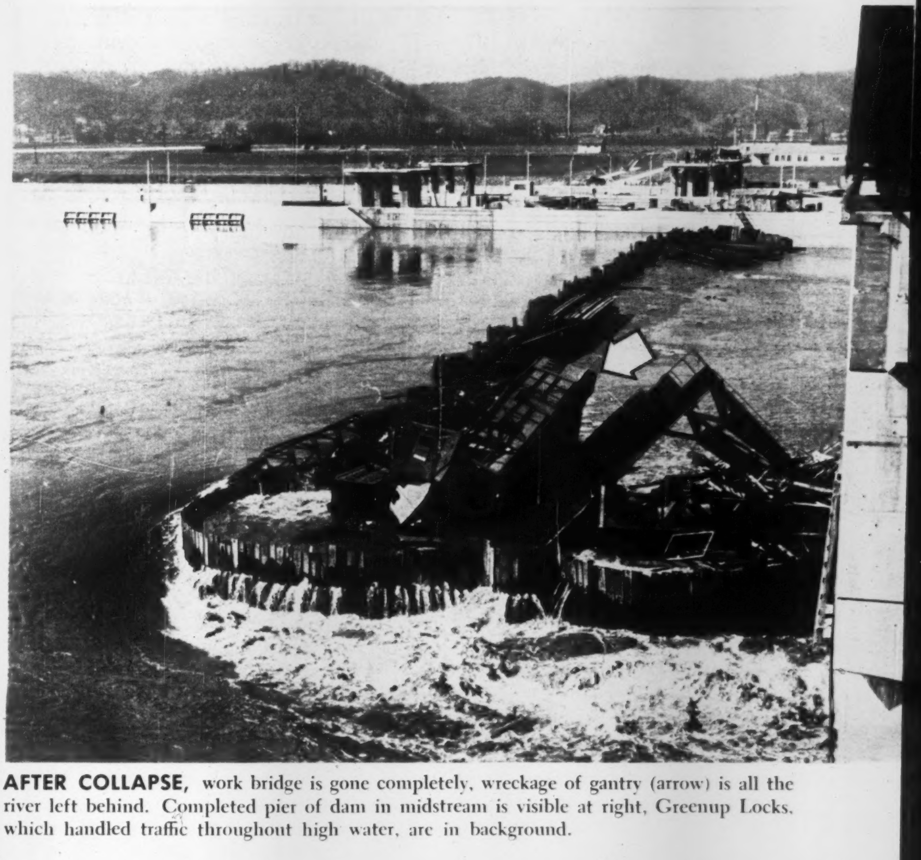
Construction jobs fared pretty well in the deep South, but the heavy rains and snowmelt caused widespread residential evacuations.

Alabama, Georgia, Louisiana, and Mississippi reported at least 10,000 persons displaced by swollen rivers. The Alabama River crested 23 ft above flood stage.

On the Chattahoochee River, the Corps reported intentional flooding of the cofferdam at the Columbia Lock and Dam site, but the cofferdam at Walter F. George Lock and Dam was not flooded. Some riprap was added to earthfill portions and engineers reported minor leakage, no damage. In western Alabama, on the Tombigbee River, the Corps' Jackson Lock and Dam project came through the high water unscathed, although the cofferdam was flooded as a precaution.



BEFORE HIGH WATER struck, gantries rode work trestle upstream of gated dam. Cofferdam (foreground) had been removed and bridge stood in water passing through raised gates. The far gantry (arrow) was wrecked; the near one swept away.



AFTER COLLAPSE, work bridge is gone completely, wreckage of gantry (arrow) is all the river left behind. Completed pier of dam in midstream is visible at right, Greenup Locks, which handled traffic throughout high water, are in background.

Too many changes and bosses says House group . . .

Shakeup Urged in Missile Base

A congressional committee investigating delays and increased costs in construction of ICBM bases last week recommended:

- Greater centralization of ICBM base management.
- Establishment of more "reasonable" target dates in the schedules of future projects.
- Approval of more definite construction designs prior to contract awards.
- Continued use of lump-sum rather than cost-plus contracts.

The recommendations were made in a report by the House Military Construction Appropriations Subcommittee, headed by Rep. Harry R. Sheppard (D., Calif.).

The committee instructed Defense Secretary Robert S. McNamara to "take immediate steps to . . . bring order and proper direction to the program and provide this nation with an ICBM base construction program that will meet the operational needs of our defense forces in a realistic manner without squandering defense funds."

The committee criticized the division of responsibilities between the Air Force and Army Corps of Engineers and an "abnormally large number of change-orders and modifications" that "threaten to push costs to alarming proportions."

Recent reshuffling of Air Force and Corps of Engineers organizations to run ICBM base construction was described as "falling far short of providing the necessary direction and the proper control." Under the changes, the two services consolidated or realigned their respective base construction operations to improve the efficiency of the base construction program.

Said the committee: "It is essential that the present divided, duplicating, and often indefinite responsibilities be eliminated and an organizational structure provided which will give specific authority and continuity of direction to the program until the operational capability of the missile site is realized."

It called for the appointment of a single official to expedite the Air Force's end of the program. The official would report directly to the Secretary of the Air Force and the Air Force Chief of Staff. His responsibilities would be similar to those of Brig. Gen. Alvin Welling of the Army Corps of Engineers Ballistic Missile Construction Office. It's not clear how his appointment would affect what the committee criticizes as the "division of responsibility" between the two services. The committee calls this the "heart of the problems now besetting the program."

The committee said the volume of change-orders "has been far out of line even for this complex program," and cited instances where contract costs may almost double as a result.

Air Force Undersecretary Joseph V. Charyk told the committee that almost every missile site for the first seven or eight Atlas squadrons is "substantially different in concept."

The Department of the Air Force and its contractors, said the committee, may be using the requirement for concurrent missile development and base construction "to cover mistakes in design that should never have been made." Presumably, the committee was referring to the missile manufacturers and not construction contractors.

Particular criticism was aimed at the "inadequate authority of contracting officers to properly negotiate" change order settlements with contractors.

In this program, said the report, the contracting officer "has been drastically hampered by far too many people constantly looking over his shoulder and by restrictions placed upon him not to exceed a certain percentage of the government estimate."

Army Engineers use incentive-type agreement for . . .

Contract for First Minuteman

On its second try, the Corps of Engineers Ballistic Missile Construction Office in Los Angeles awarded a contract for construction of the first Minuteman ICBM base, at Malmstrom Air Force Base, Mont.

A joint venture composed of George A. Fuller Co. and Del E. Webb Construction Co., both of Los Angeles, will build the missile base under a $61,773,644 negotiated contract.

Corps officials rejected bids submitted last December because the spread ranged from $78.9 million to $93.5 million against the Corps estimate of $50.8 million for the job (ENR Jan. 5, p. 28). New bids were taken February 7.

The Fuller-Webb contract is a fixed price plus incentive agreement, the first contract of its kind in the ICBM construction program.

The $61.7 million is the "going-in" target price. But under the provisions of this contract the final price is redetermined according to a fixed formula and within fixed limits. Terms of contract make it advantageous for the contractor to complete the work at the lowest possible price since, within fixed limits, he receives a share of all savings below the contract target price and, conversely, must either share or bear the complete burden of increases over the target price, depending on the extent of the overrun.

Construction at Malstrom AFB will start in mid-March and take 20 months to complete.

In negotiating the price down from the original low bid, Army Engineers eased several key contract clauses. For instance, the Corps will provide certain equipment that the contractor was originally required to procure and install.

Another reason given for the high bids originally received is that the military wrote stiff penalty clauses—$2,400 per day on a cumulative basis—into the contract and called for an immediate start on construction during the winter months. The contractors were thus forced to cover themselves against all possible delays.

It could also be that the high priority given to the Minuteman program may have caused the contractors to let the prices ride up.

The Air Force has selected another Minuteman base—at Ellsworth AFB, Rapid City, S. D. It is also making borings at Pease AFB, near Portsmouth, N. H. as a possible third site. There may eventually be some eight to 10 Minuteman bases located along the northern part of the U. S. Minuteman may also be placed on special railroad launching cars.

The Minuteman base at Malmstrom will consist of a wing of 150 Minuteman silos. The complex breaks down into three squadrons of 50 missiles each. These in turn are broken down into 15 flights of 10 missiles. Each flight of

Program

The committee called for closer coordination between equipment designers and manufacturers and between the architect-engineers and construction contractors. It suggested study of a two-phase plan for building ICBM bases.

The first phase would be limited to excavation and concrete work, the second to equipment installation. The committee said such a contracting arrangement might eliminate delays in beginning construction and lead to more "realistic plans and specifications."

The committee said the Pentagon should retain lump-sum contracting based on formally advertised bids for ICBM base construction. "Adequate recourse exists within this type of contract," it said, "for the payment of equitable compensation to the contractor for changed conditions and modifications."

As of now, over $1.5 billion has been appropriated to build ICBM sites. Former President Eisenhower's defense budget for next year earmarks an additional $251.9 million to the program. The Kennedy Administration is likely to increase the amount. It is estimated that the program will cost about $100 million over original contract figures.

ICBM Base

missiles is served by one launch control center. The underground silos to house the missiles are spread over an area approximately 200 or so miles.

Each Minuteman silo is some 80 ft deep with a 12-ft diameter. The missile stands unsupported in the silo. Covering and upper area construction of the silo will be built to withstand 100 psi ground pressure.

Construction of each silo is estimated to require about 4,000 cu yd of site excavation and fill; some 2,000 cu yd of sub-base and base courses; around 2,500 cu yd of structural excavation of earth and around 1,000 cu yd of rock excavation; around 500 cu yd of concrete; some 50 tons of reinforcing steel; and about 10 to 12 tons of structural steel.

The Corps of Engineers has not yet set a time to call for bids on the Ellsworth Minuteman base, nor has the Air Force indicated when it will definitely select other sites.

Around the World . . .

• **Reactor site shifted**—Blasters digging the 30-ft-deep excavation for McMurdo Sound's 1,500-kw nuclear power plant literally ran out of rock and the reactor site had to be relocated. At 9-ft depth the basalt of Scotts Hut Point gave out and workmen found only ice. The nuclear plant is the base's first permanent installation. The plant will be airlifted in and assembled by Seabees to be trained this summer by the manufacturer.

• **Legal snow job**—A proposal that would require new construction of all large industrial, commercial, apartment and hotel buildings to install radiant heating in sidewalks for automatic snow removal is under consideration in Philadelphia.

• **Close call**—When Canadian Public Works officials opened bids for restoration work on a wing of the Ottawa Parliament buildings, they found all 12 bids within 10% of the $5.65-million high. Apparent low bid, by Perini, Ltd., Ottawa, was $5.09 million. Officials credit an open pre-bid briefing session for the tight bidding.

• **More rapid transit**—The Delaware River Port Authority has approved plans for construction of a $50-million, 14-mile, high-speed rapid transit line linking Philadelphia with communities in Camden County, N. J. The project needs only the endorsement of the governors of New Jersey and Pennsylvania to get under way.

• **The road to work**—Michigan State Highway Commissioner John C. Mackie has proposed an emergency highway and bridge maintenance program that would put 8,000 unemployed persons to work almost immediately in his state's critical unemployment areas. All that is needed, says Mr. Mackie, is $10 million in federal funds.

• **Lifeline for Lagos**—Nigeria's Federal Ministry of Works and Surveys is at work on plans for a bridge that will keep Lagos, the capital, from strangling on its own traffic. Lagos is on an island in the Gulf of Guinea. It's only connection with the mainland is a single bridge. Ministry is expected to ask for bids late this year on a 2,000-ft prestressed concrete, $20-million bridge that will take the pressure off.

• **Turnpike sues**—The Pennsylvania Turnpike Commission is suing three insurance companies for $6.5 million on performance bonds posted for construction of the northeast extension of the turnpike. The suit charges that Manu-Mine Research and Development Corp., Reading, holder of the contract to flush and fill mine voids in the roadway to prevent collapse, failed to "perform its obligation of its contract."

• **Economy rules**—Tulsa's $6-million Civic Assembly Center will have steel trusses spanning its 240-ft width instead of the concrete space trusses originally designed by the structural engineer, Severud, Elstad & Krueger of New York City. Cost estimated for the concrete system was too high. It featured two-way, post-tensioning of precast pyramidal units.

• **Nervi's first**—Steel erection began last week on the first U. S. structure designed by Pier Luigi Nervi of Rome. It will be a bus terminal at the east approach to George Washington Bridge across the Hudson at New York City. The station—with a precast concrete roof—is scheduled for completion in 1962.

• **Higher fees protested**—The Construction Industry Association of New Orleans, Inc., is protesting the increase in contractor license fees. The minimum charge was raised to $150 from $75 for jobs done in Louisiana costing $30,000 or more.

• **Big job coming**—Detroit's City Council approved a $200,000 design study for a Lake Huron water intake to serve Wayne, Oakland, Macomb and St. Clair counties. Construction cost is expected to top $83 million.

• **Design contract awarded**—Urbahn, Brayton & Burrow of New York City and Brust & Brust of Milwaukee, received the architectural contract for a $22-million Veterans Administration hospital in Milwaukee. Contract calls for submission of bids by May 15, 1962.

• **New reservoir**—Cincinnati plans to start construction late this summer on a new 60- to 70-million-gal water supply reservoir. It will cost from $4.5 million to $5 million. Black & Veatch, Kansas City, is the consulting engineer.

In cement, aluminum cable, electrical equipment . . .

TVA Reports More Identical Bidding

The Tennessee Valley Authority, the agency that kicked off the government's price-fixing suits against the electrical equipment manufacturing industry, has reported to the Department of Justice that it has received identical bids in cement, aluminum cable and electrical equipment.

Identical bids do not themselves mean bidders are taking part in a price-fixing conspiracy. But Justice Department antitrust attorneys are sifting through the TVA reports, looking for evidence of bid rigging and conspiracy. Information about aluminum cable will undoubtedly be used by the government in a grand jury investigation into aluminum cable prices understood to be under way right now in Philadelphia.

A TVA spokesman said identical bids on cement came in response to the authority's call for price on 10,000 barrels of bagged cement. Two companies each bid $4.09 a barrel, he said. On another bid call for 190,000 barrels of bulk cement to go into TVA's Melton Hill Dam near Knoxville, no identical bids were received.

On the aluminum cable bid five companies submitted identical bids for ACSR (aluminum conductor steel reinforced) cable at 27½ cents per foot. One bidder, Nehring Electrical Works of DeKalb, Ill., offered a ½% discount for each payment made within 20 days of delivery and won the contract.

In recent weeks TVA has received identical bids for lighting arresters, oil circuit breakers, suspension insulators, current and potential transformers, distribution transformers, bus-type insulators and over current ground relays, the TVA spokesman said.

The authority awarded the suspension insulator contract to a Japanese firm, which bid $33,150 for the job. Lowest bid from an American firm was $41,600 and six other American companies each bid $42,250. For distribution transformers, six companies bid $315 per transformer for the job.

Way cleared for possible . . .

Spring Start on Boston Redevelopment

Work on Boston's $150-million Prudential Center and the $175-million extension of the Massachusetts Turnpike may start in the late spring.

Work on the commercial development was halted last year pending enactment of legislation that would permit a contract between Prudential Insurance Co. and the Boston Redevelopment Authority.

About $7 million worth of site and foundation work is completed. Key point in the legislation authorizes the authority to declare the site as "blighted," thereby making the project eligible for special tax concessions (ENR Aug. 18, 1960, p. 142).

After the law was passed, details of a contract were placed under study. Plans had called for a public hearing on a Prudential-Boston Redevelopment contract. Following the hearing, the agreement was to be submitted to Massachusetts' Supreme Judicial Court so that legality could be determined.

Meanwhile, John A. Volpe who succeeded Foster Furcolo as governor, said that he favored construction of a freeway instead of extension of the Massachusetts Turnpike from the terminus at Weston into Boston. This completely snarled Prudential's plans, which had based layout of the site and buildings design on the turnpike extension through the development. Gov. Volpe later gave up his freeway hopes, but the Massachusetts Turnpike Authority then encountered opposition from Newton, a city through which the extension would pass. Newton's Mayor Donald L. Gibbs objected to a proposed interchange and the elimination of two of four tracks of the Boston & Albany railroad.

Last week, however, Mayor Gibbs withdrew his objection. Now the public hearing on the Prudential-Boston Redevelopment Authority is scheduled for March 22. Following the hearing, it is expected that the court will be asked to rule on the contract and also on the legislation that permitted the contract to be developed. A favorable ruling is anticipated.

Now the Turnpike Authority is preparing to finance the 11.6-mile extension with a $170-million to $175-million bond issue. A construction start is scheduled for June.

Builder Back on Florida Bid List

William A. Berbusse, Jr., Inc., building contractor of New York and Palm Beach, is back on the approved list of bidders for work under the jurisdiction of the Florida State Board of Control.

The 45-year-old company, with many notable buildings to its credit in a half-dozen different states, was hit by a surprise ruling in December (ENR Jan. 12, p. 26) that it was 28% behind schedule on a dormitory for the University of Florida, and would therefore be ineligible to bid on future work.

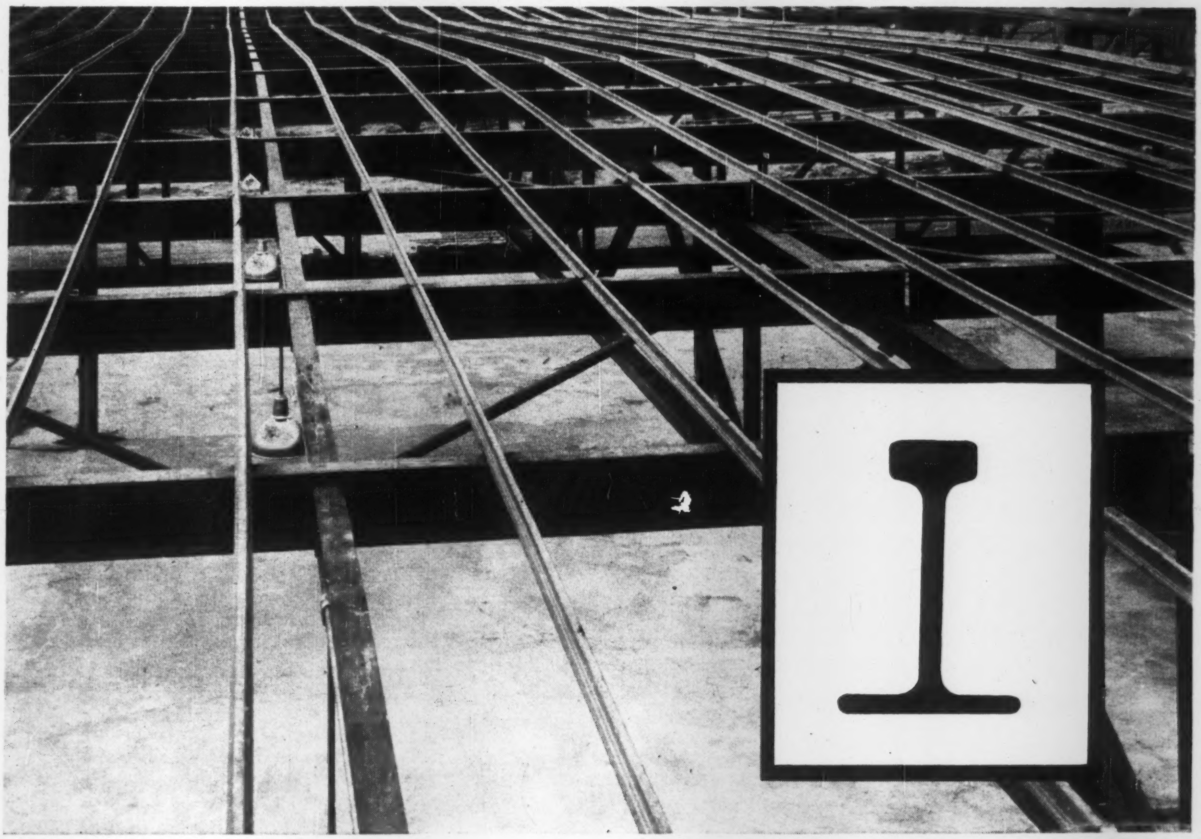
The ruling was based on the fact that the company had requisitioned 28% less funds by the end of October, 1960, than a payment schedule set up for the job had called for. The company maintained that the construction work itself was not behind schedule at all, and that money requisitions had no bearing on the matter, and are a "false and misleading method for determining whether a project is on schedule."

The company characterized the ruling as a "grave injustice," and noted that nowhere in its contract was there any statement regarding the barring of firms from future bidding. The company also maintained that it was "grossly unfair" for the board to act without prior notice to the company, and then not to grant it a hearing until January 24.

Following this hearing, an arbitration board allowed the company 15 days' extension of time on the contract because of unavoidable delays caused by Hurricane Donna and an excessively rainy season. Based on this extension, the Board of Control on February 17 reinstated the firm to the bidding list for future work under its jurisdiction.

In a final criticism of the board's action, the Berbusse company notes that if this extra 15 days is regarded as a measure of the amount that the Board considered the job to be behind schedule, it represents 4% and not 28% of the 400 days allotted to the project.

The company states that it has no doubt now, as it had none in the past, that the dormitory will be completed on schedule so that it can be occupied for the fall school term.



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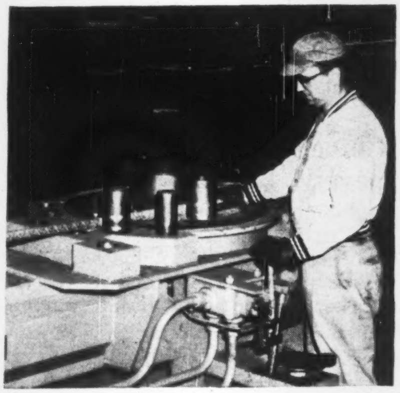

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More Sewage Plants Urged for Chicago

Great Lakes diversions could be cut, testify engineers, but Chicago would have to build more sewage plants

Hearings on pollution issues in the Chicago-Great Lakes diversion case began before a U. S. Supreme Court special master in Chicago last week with testimony by a sanitary engineer that the city could sharply reduce its need for Lake Michigan water by building additional waste treatment facilities.

Testifying for the Lake States, which oppose the city's permanent withdrawals from the lake, Richard Hazen, of Hazen & Sawyer, New York City consulting engineers, outlined a $167-million construction program that he said could trim as much as 720 cfs from Chicago's present diversions for sanitary, domestic and navigation purposes. Diversions now total 3,200 cfs.

Another sanitary consultant to the Lake States, George H. Buck, of Buck, Seifert & Jost, New York City, testified that Chicago could reduce its diversion needs without hardship by aerating the water in the Chicago Sanitary and Ship Canal and by metering water consumption.

Mr. Hazen also estimated that construction of another $90 million worth of works would enable the city to return 1,250 cfs of the remaining withdrawals to Lake Michigan as treated effluent. The diverted water at present is permanently lost to the Great Lakes. It flows into the Mississippi via the Illinois River.

The case is a composite of several suits and countersuits pitting Chicago and the State of Illinois against the so-called Lake States—Minnesota, Ohio, Pennsylvania, Michigan, Wisconsin, New York and New York's State Power Authority.

The main issue is the U. S. Supreme Court's 1930 decision giving Chicago the right to divert water from Lake Michigan at the rate of 1,500 cfs in addition to domestic pumpage of about 1,700 cfs. The Lake States contend the diversion has hampered shipping by lowering the levels of the Great Lakes. They want Chicago either to quit diverting that amount of water or to treat its sewage to such a degree of purity that it can be discharged back into the lake. The New York State Power Authority's interest is in water volume available for its hydroelectric plants on the St. Lawrence and Niagara rivers.

Numerous hearings on navigational, power and recreational aspects of the case have been held since late 1959 in the Great Lakes region.

The Metropolitan Sanitary District of Greater Chicago has already spent over $300 million in constructing sewage treatment works to conform with the 1930 decree. To reverse this procedure now and return the effluent to Lake Michigan would cost the city another $300 million or more, it is estimated.

Chicago is fighting not only to forestall a reduction of its diversion quota and an order to return waste effluent to Lake Michigan, but also to increase the present diversion down the Illinois Waterway by 1,000 cfs. The city contends the added diversion would have little effect on lake levels and is needed to dilute pollution in the Illinois Waterway.

After the current testimony for the Lake States, the court will hear testimony in behalf of the Metropolitan Sanitary District, backed up by both Chicago and Illinois.

Mr. Hazen expressed the opinion last week that sewage treatment facilities of the Metropolitan Sanitary District are inadequate now, and will become more inadequate as loads increase in the future.

"In my opinion," he said, "the canal [Chicago Sanitary and Ship Canal] should not be permitted to become a nuisance to people navigating it, or working or residing in the immediate vicinity, and an adequate sewage treatment system would be one that precluded the likelihood of nuisance. The canal is not up to the minimum standards I consider necessary for a waterway in the immediate vicinity of Chicago."

Summarizing the principal deficiencies in the Sanitary District's system, Mr. Hazen stressed the following: Excessive spillage of raw sewage into the canal due to inadequate sewer connections and insufficient treatment capacity during storms; inadequate facilities for sludge disposal; discharge of industrial wastes directly to the drainage canal system; occasional contamination of Lake Michigan by overflow through the Wilmette and Chicago River regulating works; and increase of the canal water temperature by powerplant condenser cooling.

Mr. Hazen's suggestions for reducing pollution of the drainage canal and thus reducing the need for dilution water from Lake Michigan include: Eliminating the discharge of untreated industrial wastes; increasing the capacity of the Sanitary District's main treatment works to assure effective treatment of at least twice the normal dry weather flow; installing overflow treatment plants to handle the balance of the untreated sewage up to five times the dry weather flow; and chlorinating treated effluent during summer months.

Mr. Hazen estimated the capital cost of his proposed program at $167 million, with an annual operating cost of $1.6 million.

He estimates the capital cost of additional facilities for restoration of the treated effluent at about $90 million, with operating expenses varying from $600,000 to about $1.0 million annually depending upon the amount of water returned.

Mr. Buck said diversion of Lake Michigan water for Chicago's water supply, dilution in the drainage canal, and navigation could be reduced by a third without any detrimental effects on the Chicago region.

Pointing out that Chicago's per capita water consumption exceeded that of any other large city, Mr. Buck testified that, by universal metering the city could cut down water diversion from the lake by 400 cfs.

He further claimed that diversion for the dilution of sewage could be reduced by 700 cfs by the substitution of artificial aeration for the oxygen naturally supplied by the lake water, at an annual cost of $1.25 million.

Mr. Buck also observed that Chicago could replace, in kind, the water diverted from Lake Michigan by diverting water from rivers in the Illinois watershed to the lake. Estimated cost for such diversion would be from $20 to $29 per million gallons, he said.

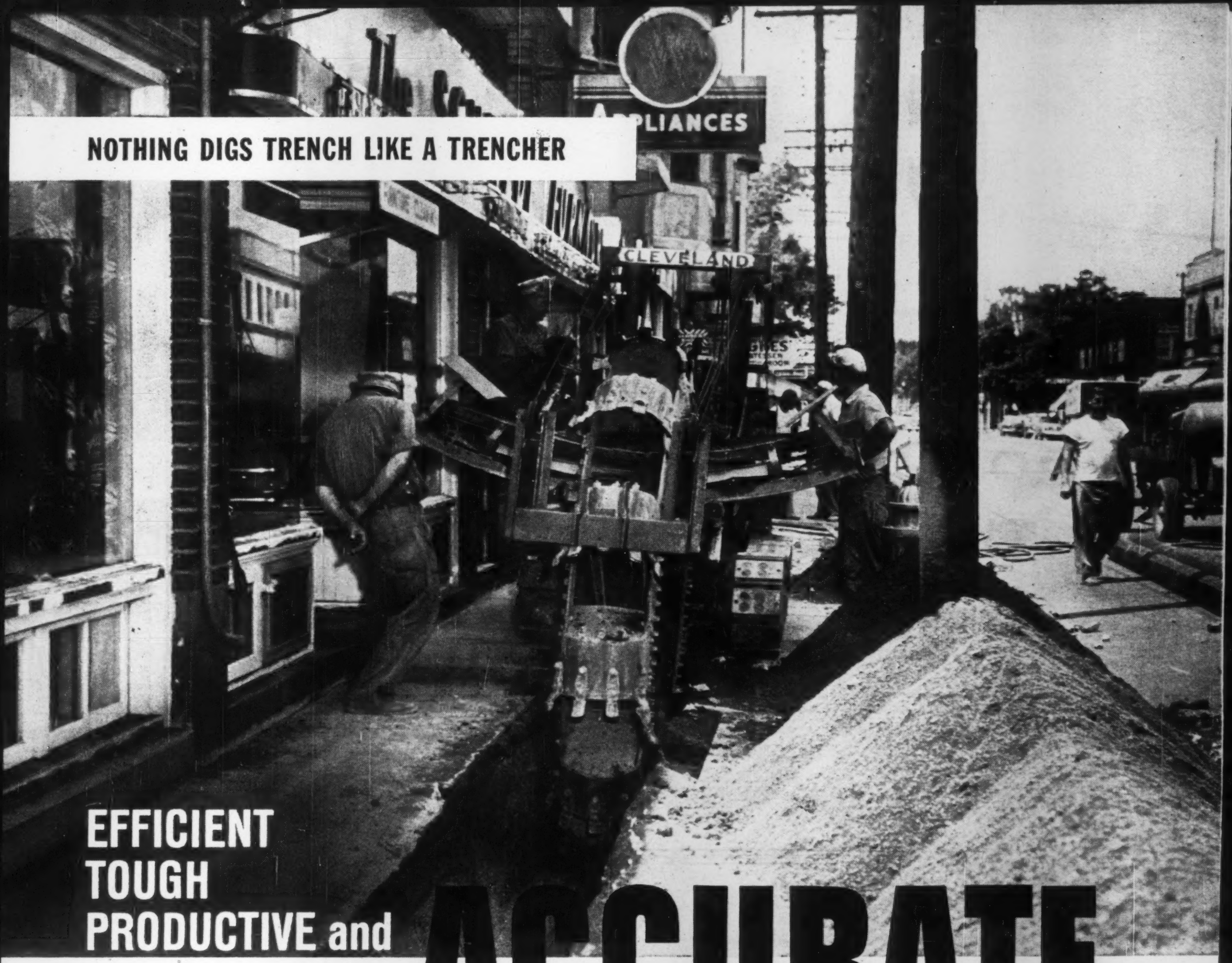
Chicago Tornado Causes Severe Building Damage

A tornado cutting through Chicago's south side residential area last Sunday produced over $5 million damage, killed one person and injured over 100 others in less than 10 minutes.

Meteorologists estimate the twister moved at 40 to 60 mph with rotating winds between 100 and 200 mph. It cut a 200- to 300-ft-wide swath along a seven-mile course before heading out over Lake Michigan.

City officials estimate over 3,000 buildings were damaged. Wrecking crews have demolished nine major structures as a safety measure in the cleanup following the tornado. Three elementary schools suffered severe roof and window damage.

Eighty other homes and stores will remain evacuated until repair work has been completed.



NOTHING DIGS TRENCH LIKE A TRENCHER

EFFICIENT
TOUGH
PRODUCTIVE and ACCURATE

No other type of excavating machine digs trench with such precision as the modern, full-crawler-mounted, wheel-type trencher – the trencher originated and perfected by The Cleveland Trencher Company.

Look again at that picture. This Cleveland is digging in the middle of a sidewalk in a commercial area, working within inches of plate glass windows, hydrants, poles, etc. No other excavator approaches the accuracy of a trencher in conditions like this.

No other excavator digs to such accuracy of line, width and grade – no deeper or wider than necessary. This precision saves costly cubic yards of sand, gravel or other backfill, minimizes repaving expense, eliminates all excess spoil handling. The trencher safely places the edge of a trench within a few inches of walls, poles, trees, etc. and flush with curbs, pavement and other surface obstructions.

The continuous-type trencher leaves straight, clean, vertical-wall trench ready for immediate installation of pipe, tile or conduit, or pouring of concrete for building footings. It produces trench of all kinds, for all types of end uses – produces it better, faster and at lower cost.

Investigate now the profit potential of a modern trencher – a fast, dependable, accurate Cleveland Trencher.

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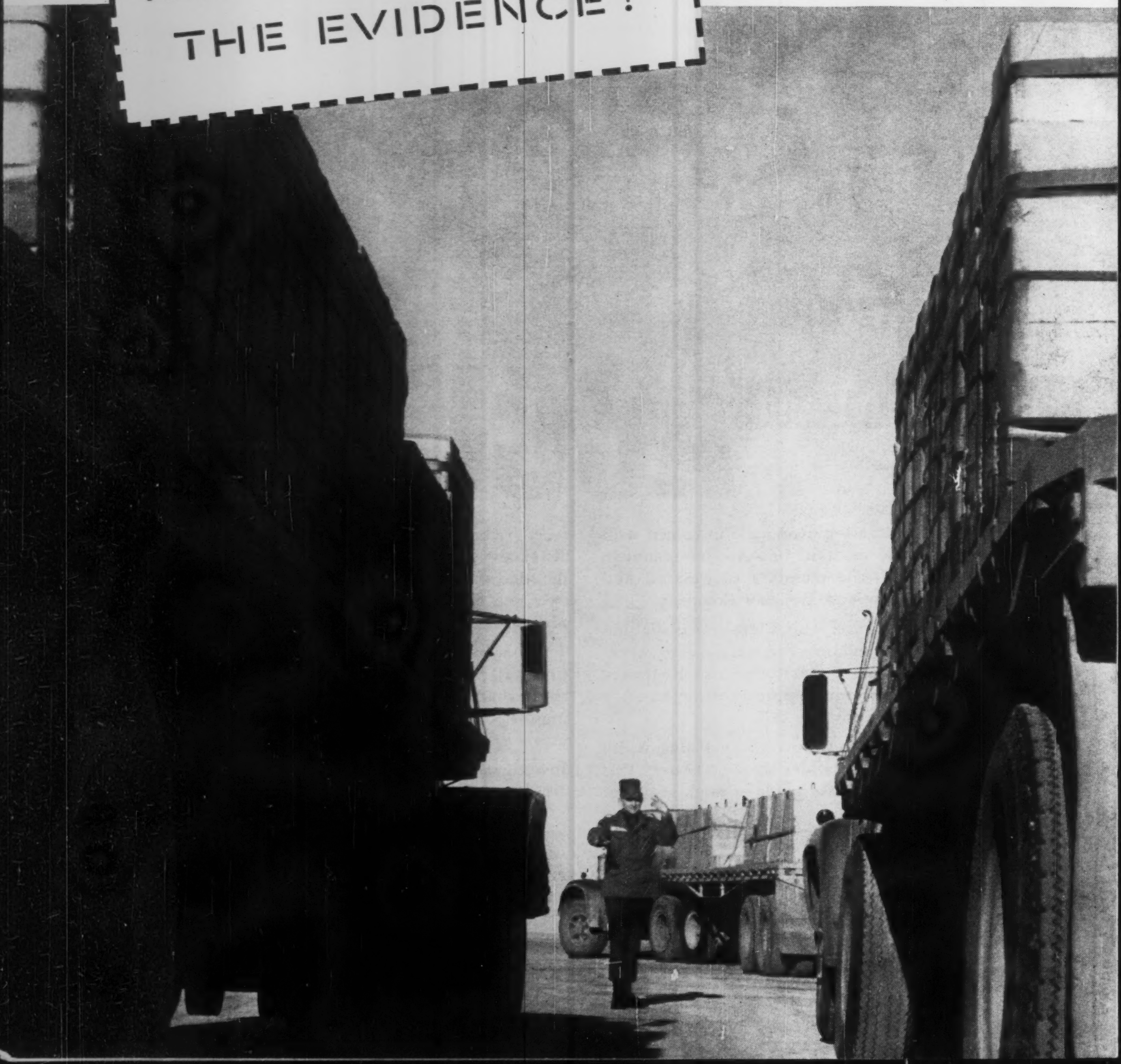
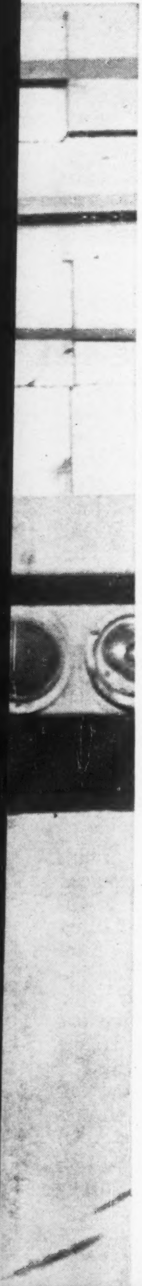
THE EVIDENCE!



over asphalt
basic ways...



1

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A count of pavement sections surviving in the great National Road Test, after two full years of traffic, showed concrete outlasted asphalt 3 to 1! Here is new confirmation that concrete gives more for tax dollars.

2

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In ratings of how test pavements retained the riding quality they started with, concrete won over asphalt by a wide margin. Conclusive evidence that only concrete can give lasting driving comfort and do it without excessive maintenance.

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. . . directed by the Highway Research Board of the National Academy of Sciences —National Research Council. Here is the most scientific pavement test ever made. Accurate instrumentation checked performance of test sections during 2 full years of traffic. 99 trucks, 19 hours daily, 6 days a week. There were 17 million miles of travel—1,113,762 load applications!

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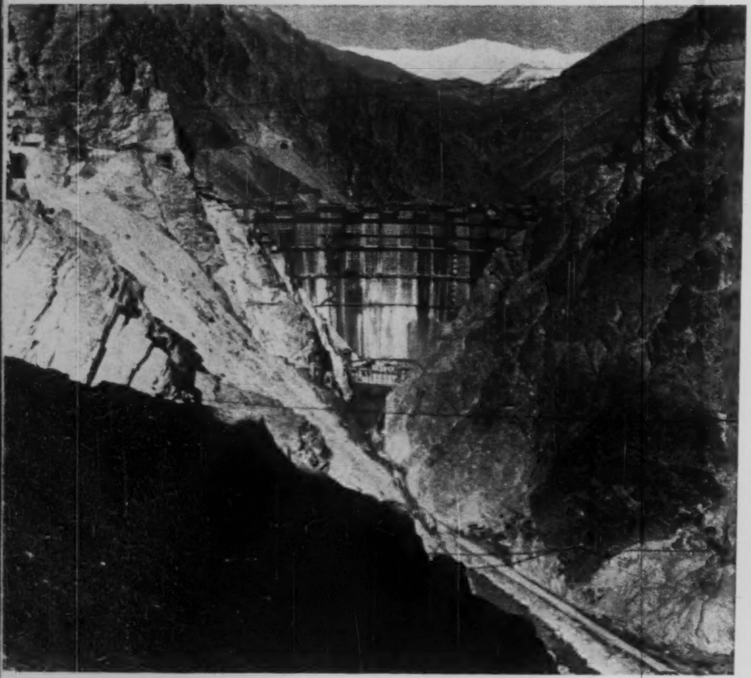
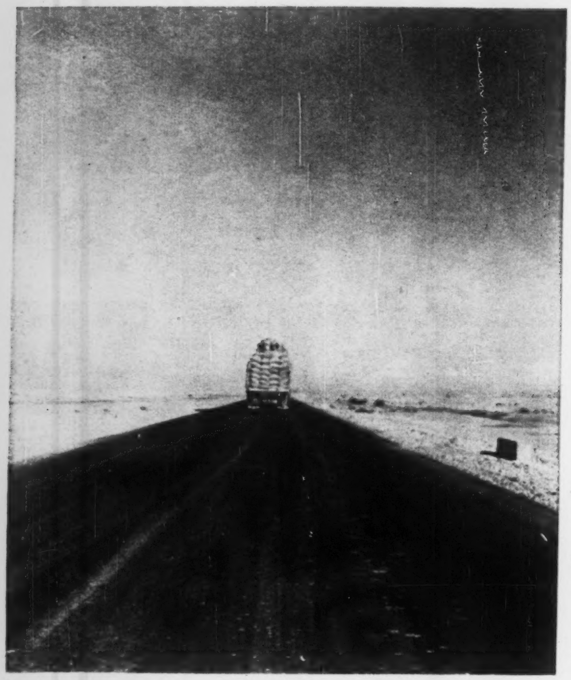
A national organization to improve and extend the uses of concrete



WATER—Karadi Dam, a U. S. import, will provide a modern supply to Teheran, until recently the world's largest city without one.



ROADS—Half of a new 750-mile north-south highway from Persian Gulf to Caspian Sea is U. S. designed and supervised.

Iran Pushes Hard for Development

By Waldo Bowman

Iran is trying to do two jobs at once. Neither can be slighted without courting disaster; but their combined effect is to put a dangerous strain on her economy.

Smack up against Russia's southern doorstep, from which the Soviets, like the Czars before them, look longingly toward her warm-water Persian Gulf ports and her oil, Iran feels a vital need for strong military forces. Yet equally pressing, in the enlightened view of Shah Mohammed Reza Pahlevi, is the need to raise the abysmally low standard of living of the great bulk of the population.

(Unfortunately, not all the Shah's family and followers enthusiastically endorse this view.)

To satisfy both of these needs as quickly as political considerations and social justice require, even Iran's lush oil revenues (up to $300 million a year), are insufficient. As a consequence, the U. S. during the past decade has provided Iran with over $1 billion in economic and military aid. And great hunks of this money have gone into construction.

On the military side there have been cantonments, airfields and training facilities. On the economic and social front there have been hospitals, schools, water supplies, sewers, roads, irrigation and hydro power. Iran is running practically the whole gamut of construction, and at least two of the projects—big arch dams—are of top technical importance.

Plainly visible in Iran today is the substantial progress made since the beginning of Iran's second seven year plan in 1955 (ENR Sept. 25, 1958, p. 52).

To reach the point, where results—and not just plans—can be talked about, Iran has climbed a difficult path. On several occasions, immediately after the war, she invited foreign experts to make plans, and then found it impossible to implement them. Finally one of them clicked enough to result in the formation of the Plan Organization, an extra-governmental body, which was given the authority to borrow money, either domestically or internationally, and pledge future oil revenues to repay it. But the Mossadegh revolution intervened, and it was not until 1955 that the Plan Organization could get going and formulate the present seven year plan.

It is called the second seven year plan because a first one had been announced in 1949, although very little came of it outside of the few projects, mostly schools and health centers, that the U. S. Operations Mission (USOM) could provide with ICA funds. The USOM program in Iran, actually the first under the "Point Four" Technical Assistance Act, began in 1951, moved slowly at first and then accelerated after 1953. More than 200 projects have been initiated under the program so far.

But it is since the Plan Organization got on its feet that progress has become apparent, both in projects under way and completed and in arrangements for financing on other than a grant basis. For USOM projects, in fact, Iran's contribution of local project expenses has risen from nothing in the beginning to about 70%. And, in addition she has borrowed large amounts from the Export-Import Bank, the Development Loan Fund and the World Bank.

The part of this investment that has gone into construction has been largely under the direction of U. S. engineering and construction organizations, although World Bank projects encompass firms from other countries. All projects have enlisted growing participation on the part of Iranian contrac-

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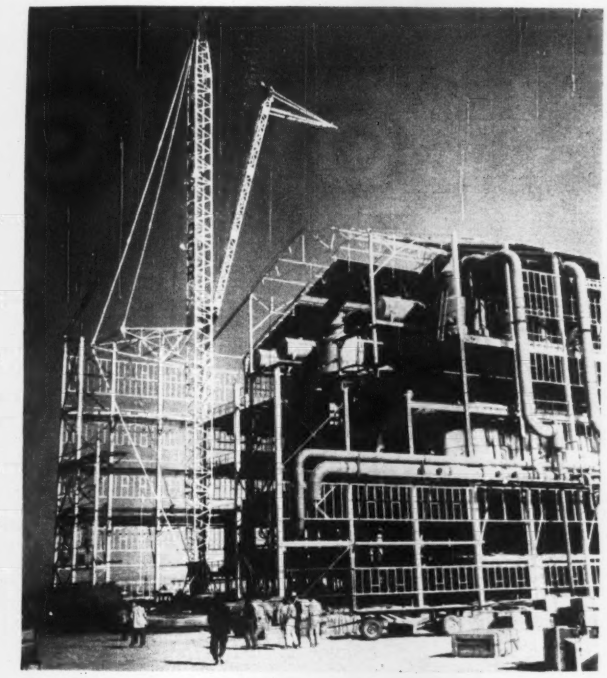
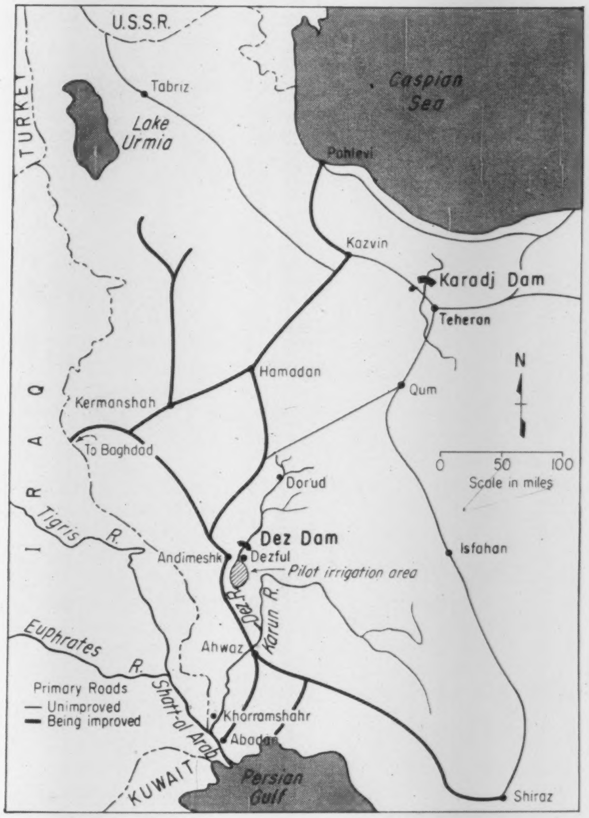
Article VII in a series of reports on construction activity in Asia and the Middle East by ***ENR Editor Waldo G. Bowman.***



FACTORIES—Sugar refinery from Holland will get its cane from fields reclaimed on a huge U. S. land-grading project.



WESTERN IRAN is the center of construction efforts aimed at raising the low living standards of this ancient land.

and Defense

tors. Three of the U. S. firms have made such notable contributions to Iran's progress that they and their projects deserve special mention in any review of progress.

• **A contractor's contribution**—Perhaps the oldest name in the current Iranian construction picture is Morrison-Knudsen, the international construction organization headquartered in Boise, Idaho. It was an M-K report made for Iran back in 1946, in connection with a program for which World Bank loans were to be sought, that led into the formation of the Plan Organization. Today M-K is active on both military and civil construction in Iran and has been since early in 1957 when, as sponsor of a joint venture, it was low bidder on twelve military projects, mostly cantonments and airfields.

According to Otto Ludwig, resident M-K partner, who came to Iran after administering the Dew Line job in Canada, all but about $4 million of the $85 million worth of work involved has now been completed. The jobs are administered by the Gulf District of the Mediterranean Division of the U. S. Corps of Engineers, and the firm name is M-K-O. This, by extreme compression, encompasses Morrison-Knudsen, the Henry J. Kaiser Co., Oman Construction Co., R. P. Farnsworth & Co. and Wright Contracting Co. All of the American supervisory personnel, nearly 200 at the peak, are from M-K, while an exclusively Iranian labor force is used. Iranian subcontractors do most of the building work while M-K handles excavating, paving and utilities itself.

These military projects have encountered the extremes of climate and topography for which Iran is noted, from snow-clad mountains in the north to the burning deserts of the south. The 2,500 buildings on these twelve bases—barracks, hospitals, mess halls and the like—have required some 200 million bricks and a lot of cut stone, since native timber is almost non-existent in Iran. Iranian labor knows how to use these materials, but it has had to be taught how to operate and maintain construction equipment. Several hundred fine operators have been trained by M-K-O on these military projects.

M-K-O is also just finishing up another job, a separate $3.6-million contract to lengthen the runway and a parallel taxiway at Teheran's Mehrabad airport. Already equipped with one of the finest air terminal buildings in the world, Mehrabad will now have a 14,000-ft jet runway, 150 ft wide.

But Morrison-Knudsen's biggest job in Iran at present is Karadj Dam, a 590-ft-high concrete arch. It will store water for Teheran, which up until a few years ago was the largest city in the world without a modern water supply. Teheran has a population approaching 2 million and, if one excludes the appalling slums in the southern part of the city, it presents the appearance of a clean and bustling 20th century metropolis with wide streets and modern buildings, several up to 10 stories, and with even taller ones under construction. But up until three years ago, when a limited amount of Karadj River water was brought in through a modern filter plant, all of the city's water came from wells and open street ditches supplied by many small tunnels, which run far out into the hills to tap snow-fed aquifers. Too often these street ditches also served as sewers.

In addition to supplying Teheran with an ample and continuous water supply the Karadj project will also generate power for about four hours each night until a downstream re-regulating reservoir is full. Water from this reservoir will be released into the river and, some miles downstream, will feed into a new pipeline leading to the city's filter plant. Some water from the river will also be diverted for irrigation.

(*Turn the page*)

Morrison-Knudsen's foreign subsidiary, M-K International Constructors, Inc., (M-K-I) is building the Karadj project, on which Harza Engineering Co., Chicago, handled the design and is exercizing construction supervision. Prior to starting the dam, M-K-I, under another contract, built a difficult mountain road around the reservoir site to replace one in the Karadj canyon. It is twelve miles long and it includes seven tunnels totaling two miles in length.

M-K-I was also the contractor on preliminary work for Dez Dam in southwestern Iran, involving the construction of a difficult tunnel access road from the top of a 1,500-ft gorge to the damsite and the provision of initial camp facilities. In the competitive bidding for the main dam contract, M-K-I lost out to an Italian combine.

• An architect-engineer's contribution— Another firm with an outstanding record of accomplishment in Iran is Litchfield Whiting Bowne & Associates, successor to Litchfield Whiting Panero Severud & Associates, architect-engineers of New York. Originally operating as the architectural services division of USOM/Iran from 1952 to 1956, the firm is now completely independent, serving public and private clients alike with preliminary or complete architectural and engineering designs, and in many cases with construction supervision.

Litchfield Whiting Bowne has handled a total of 226 projects during the time it has been in Iran. Since the USOM period it has finished 80 projects and has 70 under way. Some $30 million worth of Plan Organization projects and a dozen jobs for the National Iranian Oil Consortium are included in the list.

One notable fact about the firm's work is that the majority of the projects are of a type that show relatively quick results. Moreover, they are scattered in towns and villages throughout the country and so give a direct and widespread lift to the standard of living.

Hospitals of 25-bed size are being built in a half-dozen villages too small to show on any but a detailed map of the country. Perhaps fifty equally small communities have benefited from schools and street paving, and a number of towns of only slightly larger size are being equipped with sewers and safe water supplies.

Typical projects in the larger cities are two hospitals and a slaughterhouse in Teheran, a water supply and a hotel in Abadan, and a sewage collection and disposal system for the booming port city of Khorramshahr, where a river wall and highway are also under construction. Particularly notable is Shiraz, which boasts a spectacular tourist attraction in the 2,000-year-old ruins of Persepolis, ancient capital of the Persian Empire, but has few modern facilities to serve either the tourists or the populace. Shiraz is getting a tuberculosis sanitorium, an eye hospital, an expansion of its water supply, a network of new streets, an electrical distribution system, two new highway bridges, a large medical center, including a 250-bed hospital, and a number of new schools.

2,500-YEAR-OLD IRRIGATION CANAL has been put back into service to bring Dez River water to 50,000 acres of desert.

The majority of the firm's staff in Teheran is Iranian, including the entire civil engineering division. The total office staff numbers 85; and there are about 60 men in the field acting as clerks-of-the-works on the various jobs.

• A development firm's contributions— The third of these U. S. firms playing a key role—and probably the most spectacular one—in helping Iran to raise its standard of living is the Development and Resources Corp. of New York City, whose principal officers are David E. Lilienthal and Gordon R. Clapp. Since both are former chairmen of the Tennessee Valley Authority, it is not unnatural that they should attempt to apply to Iran the original TVA concept of regional development based on the unified and complete exploitation of a river basin.

An ideal river basin for this purpose was ready at hand in the Karoun and its tributaries, situated in the southwest corner of Iran and encompassing the 58,000 square miles of the province of Khuzestan. In ancient times this region was the granary of the Persian Empire. Although now largely desert, it is visited almost annually by devastating floods. And it is this region today that is the locale of one of the world's richest oil fields, of Iran's principal seaport, Khorramshahr, and the adjacent city of Abadan and its huge oil refinery, and of a sizable inland city, Ahwaz. Add to these characteristics the fact that ample water is available in the Karoun to restore thousands of acres of desert land to fertility and that damsites are available in the mountains where storage can be effected and hydro power developed, and a distinct development pattern emerges.

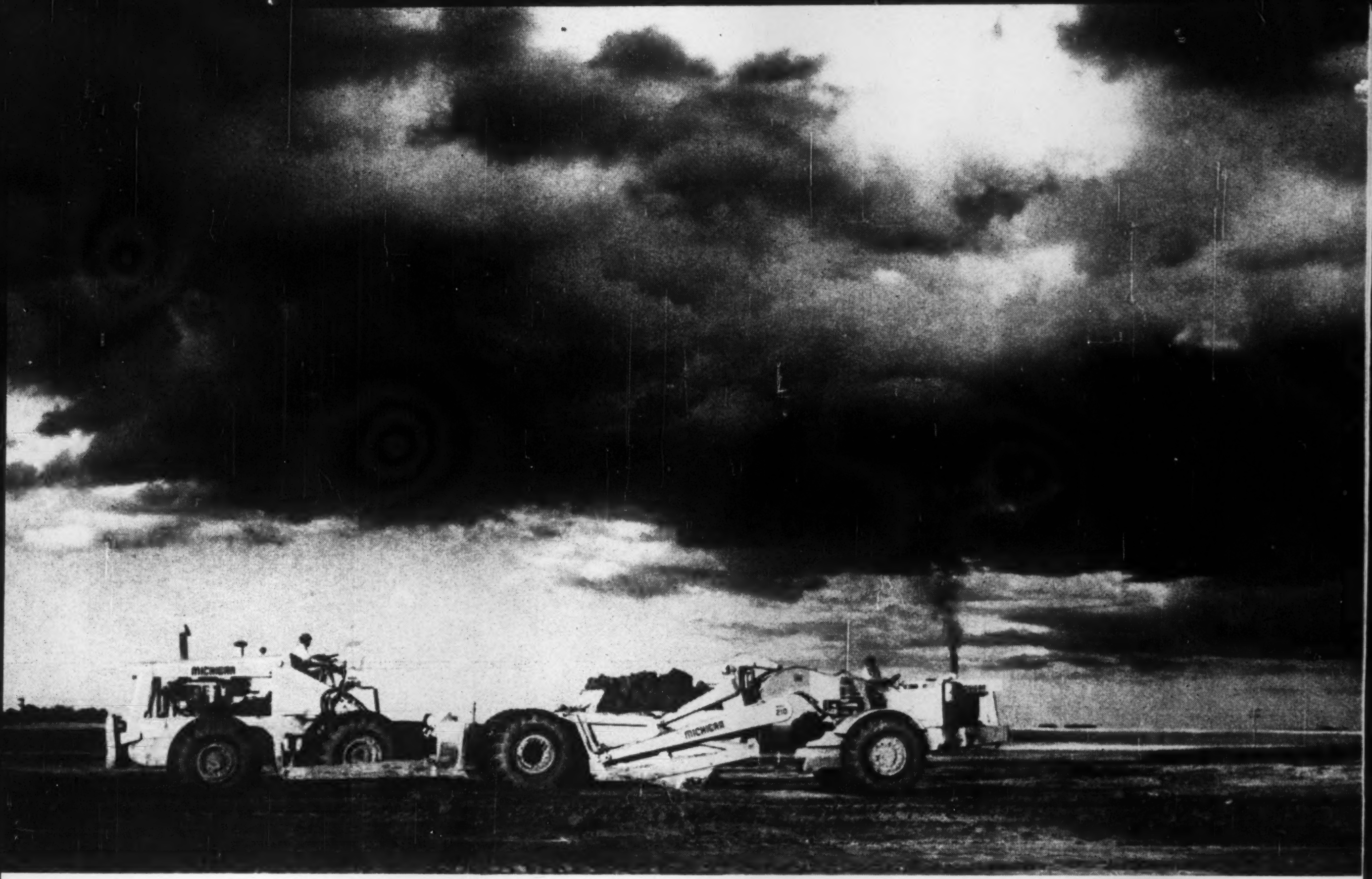
As envisioned by Development and Resources Corp. and its Iranian operating agency, Khuzestan Development Service (KDS), and accepted by the Plan Organization in 1956, the plan involves the construction of storage dams and irrigation systems, the establishment of agriculturally based industry, power generation and its distribution to and throughout the cities and towns of the region, and utilization in petrochemical plants of the gas now wasted at the Abadan oil refinery. Other objectives are training Iranians in the operations of these facilities and interesting private capital in establishing the industrial facilities.

Concrete evidence of progress on most of the elements of this plan can now be seen from Abadan north 170 miles to the mountains. The key facility is a 630-ft high arch dam on the Dez River, a major tributary of the Karoun.

The $58-million project is situated in a narrow gorge, 1,500 ft deep and accessible only from top. Work is approaching the foundation excavation stage following a major tunneling operation in reaching the site and providing for river diversion.

In the meantime, construction of facilities which will use the water and power from Dez Dam has made substantial progress in the wide desert valley below. An irrigation system to supply a 50,000-acre pilot area is under construction about 70 miles north of Ahwaz. This work will lead to the establishment of modern, high-yield agriculture and, most important, the reintroduction of sugar cane, a crop long abandoned because of soil alkilinity and lack of water.

The eight miles of main canal and three pumping stations were completed last August (the first station lifting the water about 45 ft from the Dez River), and work is now under way on 20 miles



Speed was the answer to lost time caused by rain. Pushing in both directions at 4 mph…

Michigan Dozer loads 832 yds/hr

The forecast was for rain…and more rain. Same forecast yesterday . . . and the day before . . . and the week before. Already, Anderson Earth Construction Co, Calgary, Alberta, had lost 25 shifts. Even worse, only 40 shifts or so were left before freezeup. The job—500,000 yds of borrow, plus 40,000 yds of common excavation on a 3.14 mile stretch of new Highway #2 south of Calgary—*just had to be completed!*

Fleet includes two Michigan Scrapers

Even under this pressure, William Anderson, owner-manager of the firm, had a team he felt confident of—two 19 yd Michigan Tractor Scrapers, two 18 yd units and a rubber-tired 262 hp Michigan Tractor Dozer. Speed was the factor, felt Mr. Anderson, which could get the job done. "Basically," he says, "our confidence was founded on a loading method made possible by the dozer."

This Michigan, like all Michigans, had the same gears, and speeds, both forward and reverse. Equipped with a pusher-block in the rear, it could push either direction with the full power of its 262 hp engine equipped with torque converter. Thus, by loading scrapers in alternate directions, all turns and all backup time would be saved.

Average load time —35 seconds

And so the final phases of the wet job proceeded. Load times in the water-soaked clay ranged from 25 to 45 seconds. Most pushes were made in second gear, averaging 4 mph. Loads averaged 14 to 15 pay yds. Even in this slippery footing, the Tractor Dozer with 29.5-25 hydroflated tires, four wheel drive, and a working weight of 56,680 lbs, had plenty of traction.

Dozer services 4 scrapers despite hauls under 1000 ft

Michigan serviced four scrapers, one more than usual, even though most hauls were under 1,000 ft one-way. Cross-sections showed it loaded 832 pay yards per hour throughout standard 12-hour shifts. Alternating directions of push had the advantage of cutting waiting time; also the apparent disadvantage of virtually eliminating time for operator to rest. Even so, because of its ease of operation, the Michigan Dozer and its one operator produced as much their 12th hour of work as their first—an average of 10,000 pay yds per day.

Perhaps a Michigan Tractor Dozer could speed production on *your* job. There are four models to choose from—162 to *600* hp. Also, check the matched Michigan Tractor Scrapers—same basic power train design, same engines, same controls. Call us for a no-obligation demonstration.

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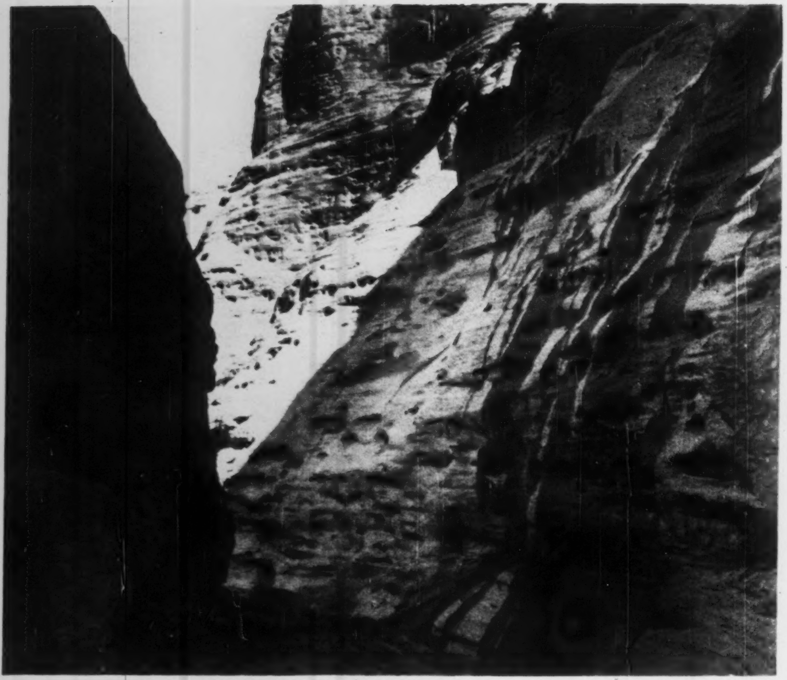
of laterals. An interesting aspect of the job was the utilization for the main canal of about two miles of an ancient 50-mile canal built by the Emperor Darius 2,500 years ago.

About half of the pilot area will be developed into a sugar cane plantation, and an extensive job of leveling and grading the land for irrigation with heavy-duty earthmoving equipment is now under way by the Ralph M. Parsons Co. of Los Angeles. In the center of the site, a sugar mill and refinery is under construction by a Dutch company (Werkspoor), and all around it sugar cane in about 100 varieties has been test planted. The 10 highest-producing types have been determined and are used for seed on the plantation.

A larger irrigation system and planted area had been planned originally, including a diversion dam on the Dez. But the World Bank, which is financing the work, required postponement of such enlarged operations until after a three-year test period. During this time it is hoped that satisfactory government-landowner-tenant relationships can be developed and that a system for levying and collecting water payments can be worked out. Then 25,000 additional acres a year can be brought under cultivation until the project's entire 300,000 acres is developed. In this operation, as in the present pilot area, sugar cane will not be the only crop. Experiments are now under way in improving production of alfalfa, cotton, rice, sugar beets, wheat, barley and vegetables.

Electrification of Khuzestan towns and villages is also a major object of the program, and progress is notable here, also. It is also noticeable, for the 90-ft towers of a new 132 kv transmission line are the dominant feature of the desert skyline for the 70 miles between Abadan and Ahwaz. The line is now energized from a steam plant at the Abadan oil refinery, but its eventual purpose is to carry current in the opposite direction when a 230-kv, 97-mile line from Dez Dam to Ahwaz is completed. The Abadan-Ahwaz line was built at this early stage in the program in order to relieve a critical power shortage in Ahwaz, but it also is forseen that it will stimulate an earlier establishment of new industries in the city, which the plan envisioned as the factory center of Khuzestan.

Bringing the power to Ahwaz also required a new distribution system in that city and the establishment of a company to build it and market the power. This company has now been in operation for over a year, and the new distribution system is approaching completion. The Ahwaz company was set up by the Khuzestan Electric and Gas Energy Authority (KEA) which was established by the Plan Organization to own and operate all the power production and distribution facilities in the province. KDS is providing the initial management. The program for Ahwaz is a forerunner of plans already in the works for such other cities as Abadan, Khorramshahr, Andimeshk and Dezful.



SITE OF DEZ DAM where a 630-ft concrete arch is under construction to store water for power and irrigation in Southwestern Iran.

It will be noted that both the electric utilities and the sugar mill are projects of the Plan Organization and thus government owned. The original plan also recommended the construction of a polyvinyl chloride plant to use the now wasted natural gas in the oilfields, but this project has been postponed in the hope that some private Iranian company can be interested in the scheme.

These three companies—Morrison-Knudsen, Litchfield Whiting Bowne & Associates and Development and Resources Corp.—are by no means all that are assisting in Iran's development effort. On the military program, J. A. Jones Construction Co. has a $28-million cantonment contract, for example, while Amman & Whitney, consulting engineers of New York, are supervising the construction of 350 miles of the country's 750-mile north-south highway, which runs from the Persian Gulf to the Caspian Sea. The World Bank has loaned the Plan Organization $72 million for this highway modernization program.

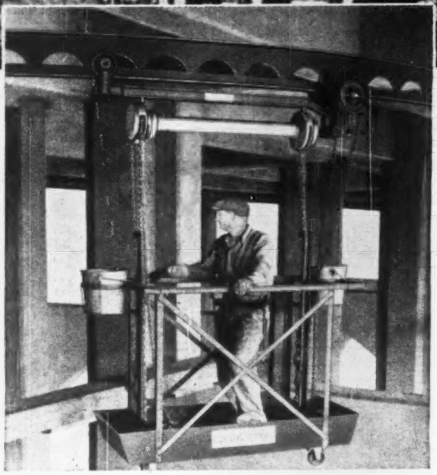
Iran is getting both her jobs done, as evidenced by this great variety of work, but the strain on her economy has been tremendous. In some cases, as in the plans to undertake regional development in other provinces on the Khuzestan pattern, she has had to postpone action. And some second thoughts are apparently being given to a steel mill project, as evidenced by the fact that Kaiser Engineers has been engaged to do a feasibility study, even though it had previously been announced that the German firm of Demag-Krupp was all set to start construction.

Iran's situation was emphasized last summer when her request for a $141-million loan to cover foreign exchange requirements during the next two years was met by a Washington rejoinder that evidence of effective fiscal reform must come first. Luxury living and corruption on the part of some army officers and politicians are constant topics of discussion in Iran. Unless this situation, if it exists, is not replaced by some belt tightening and austerity, Iran's development may have to slow down.

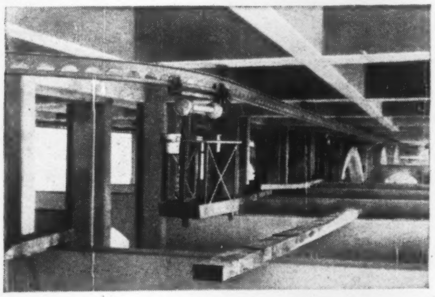
In the meantime, however, she is making progress on the construction front, and two of the projects, the Karadj and Dez dams, represent technical achievements of a high order that are worthy of special attention. Karadj is entirely a U. S. import in design and construction, while Dez is largely a product of Italian engineers, and is being built by Italian contractors under the field supervision of KDS. Less than a dozen dams in the world are higher than these two Iranian structures, and each in turn, as it is completed, will be the highest dam in the Middle East. Next week an article will cover the design and construction of these notable structures.

Two Tramrail archbeam tracks, located between the sets of triple arches, run the entire length of this concrete bridge.

Traveling Platform *Facilitates* Bridge Inspection



Close-up inspection can be made quickly, safely and easily with this Cleveland Tramrail inspection unit.



The platform not only travels from end to end underneath the bridge, but it can be lowered between any pair of arches.

THE Penn-Lincoln Parkway Commercial Street Bridge, Pittsburgh, Pa., has been equipped with a Cleveland Tramrail system so that periodic inspection can be made to determine the condition of the bridge.

The system, which has two archbeam tracks running the entire length of the bridge, is provided with a hand-propelled traveling platform and hoist, making it possible to get close to all sections underneath, which otherwise would be difficult to reach.

Serious damage has been done to many bridges because of defects which have gone unnoticed. Cost of maintenance is reduced considerably if cracks in floor slabs and concrete pillars are discovered and repaired as they first begin to appear.

It is also important that close watch be kept of all-steel bridges and the Tramrail inspection equipment is not only a convenient, easy means of aiding this work, but is also a big help in making the repairs as well as for painting.

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delivers
dependable power
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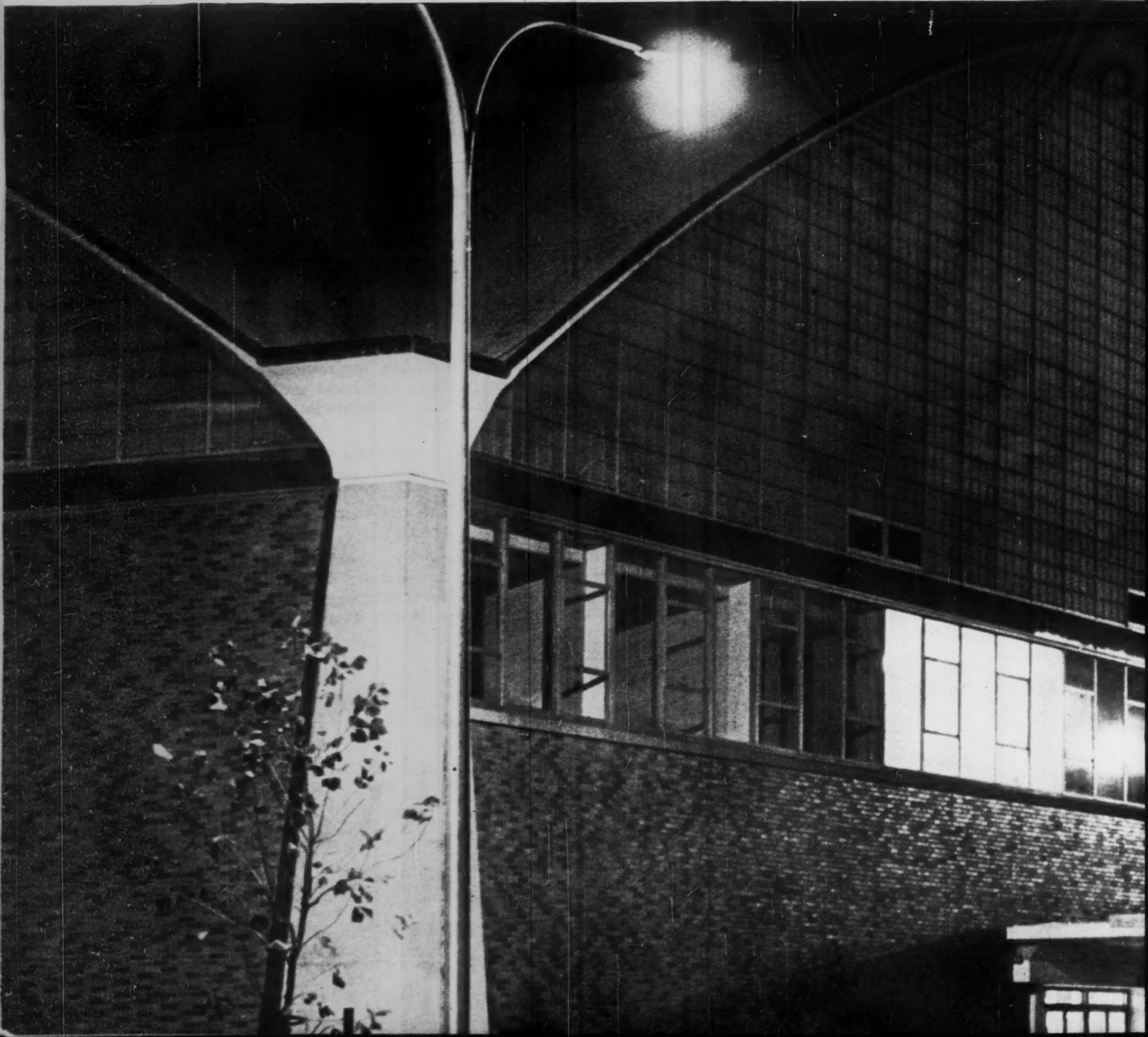
(Below) Functional, clean lines of the Providence Post Office exterior are highlighted by Westinghouse OV-25 parking area luminaires, assuring 24-hour maximum security operation. The luminaires' horizontal housing and tilted optical system are completely sealed against dirt, moisture and bugs for years of low maintenance, high efficiency operation.



The nation's first automated post office, labeled "Project Turnkey," is operating now in Providence, R.I. It represents the first step in the government's plan to make the complexity of mail handling completely automatic to insure 24-hour delivery of mail to any part of the country.

Behind the architectural beauty of this $20,000,000 facility is a vital electrical nervous system. And it's the sure, steady performance of Westinghouse electrical apparatus that keeps this marvel humming.

From dependable, maintenance-free outdoor luminaires that light the 14-acre site to 69 power and lighting panelboards that feed sensitive letter sorters, facing and cancelling machines, parcel post machine and conveyor system, Westinghouse products coordinate for the high degree

(continued on next page)

These 11 sorters distribute mail to bins for 300 separate destinations after an operator's key punch code has sent an impulse to the memory unit of the sorter. Other major machines in the system are six letter cullers, six facer-cancellers, two parcel post sorters, and over three miles of conveyors.

PROVIDENCE
POST OFFICE

Owner: Intelex Systems, Inc. Architect-Engineers: Charles A. Maguire and Associates, Providence, R.I. General Contractor: Gilbane Building Company, Providence, R.I. Electrical Contractor: Brady Electrical Company, East Providence, R.I. Westinghouse Distributor: WESCO, Providence, R.I.

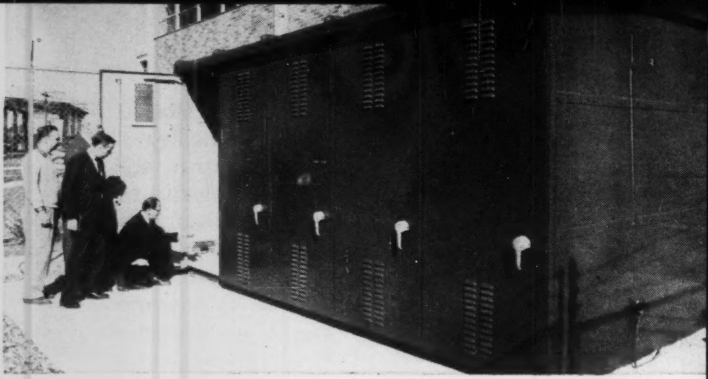
(continued from preceding pages)

of service so important to this "Post Office of Tomorrow." It is estimated that 10,250,000 kilowatt hours of electrical energy will be required annually for the 24-hour operation of the plant.

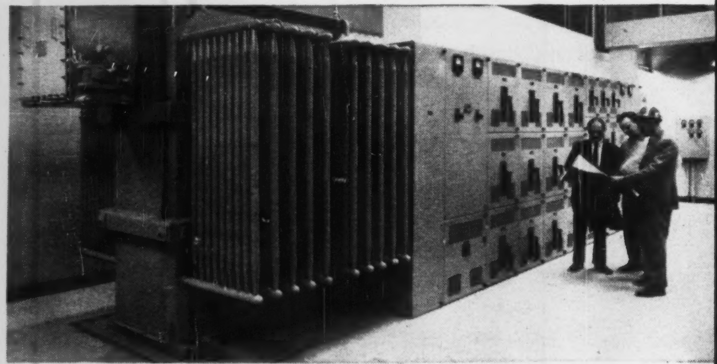
The Gilbane Building Company, Providence, erected the structure for Intelex, a subsidiary of International Telephone & Telegraph, who will lease it and its mechanized mail processing equipment to the government for 20 years. Design was by Charles A. Maguire and Associates, Providence. Westinghouse personnel worked closely with the consulting engineer from design stages through completion. Experience and the completeness of the Westinghouse line earned this working role in mail handling history.

You can be *sure* . . . if it's Westinghouse!

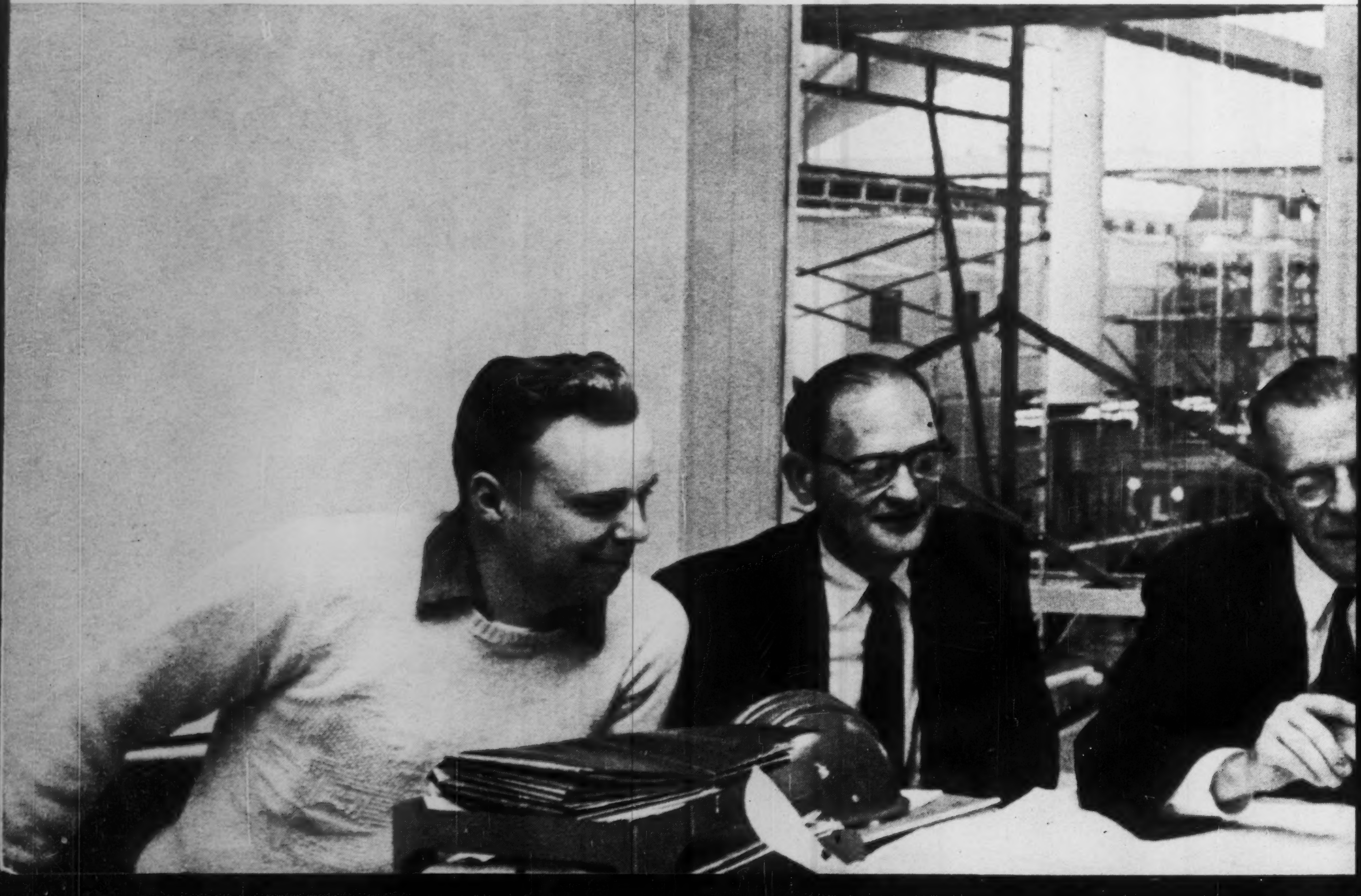
(Below) Reviewing drawings during the construction of Project Turnkey are, left to right: Arthur A. Watson, General Foreman, Brady Electrical Co., Inc.; A. I. Israel, Charles A. Maguire and Associates; E. Howard Rohrbach, Project Manager, Intelex Systems; Richard F. Martin, Project Manager, Gilbane Building Company; R. W. MacArthur, Westinghouse; and Walter W. Botts, Manager WESCO, Providence.



(Above) Rugged, weatherproof enclosure shields Westinghouse 150-DH-250 air circuit breakers which protect main feeders providing power to the post office. Inspecting breakers are A. A. Watson, W. W. Botts, R. W. MacArthur, and A. I. Israel (kneeling).

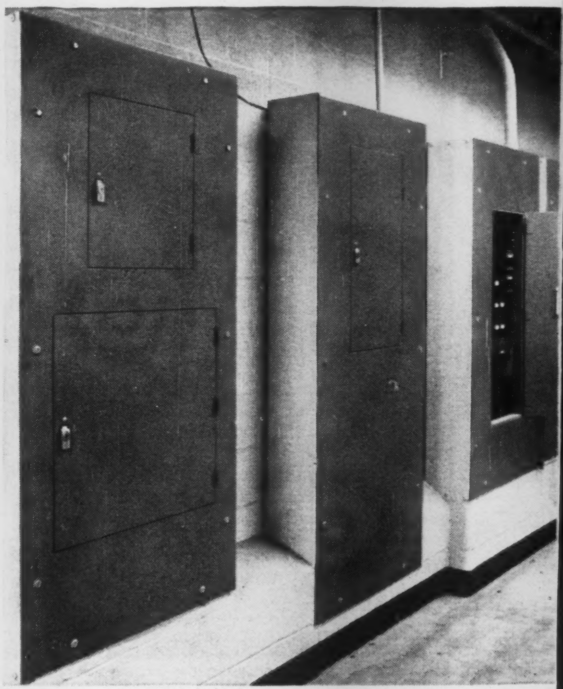


This main substation, rated 2500 kva, provides reliable source for lighting and power circuits. It receives incoming power at 11 kv directly from outdoor metal clad switchgear. Discussing schematic drawings of power circuits are: A. I. Israel, A. A. Watson and R. McCloskey, Resident Engineer, Charles A. Maguire and Associates.



(Above) A. I. Israel operates remote circuit breaker control panel for 15 kv outdoor metal clad switchgear as R. W. MacArthur looks on. Switchgear furnishes incoming power safely and efficiently to Westinghouse 500 kva power center serving post office auxiliaries. Compact design permitted location in minimum space, freeing valuable footage for work areas.

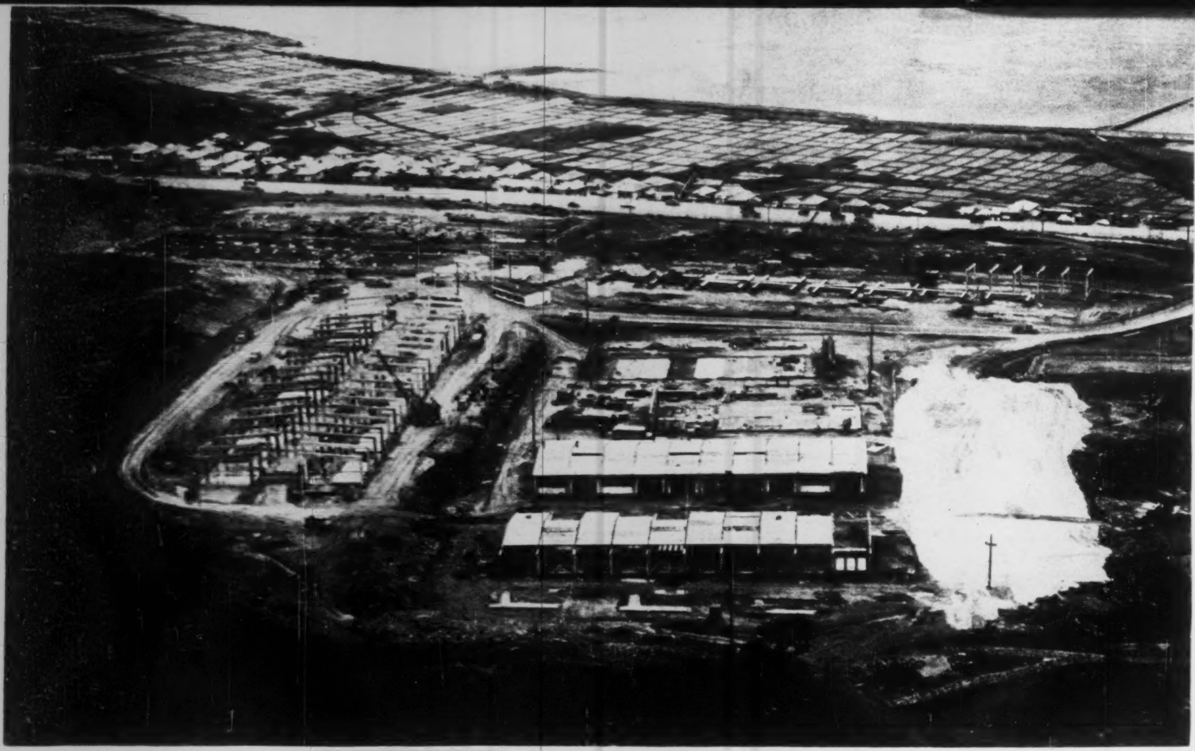
A. I. Israel, left, and W. W. Botts discuss operation of electrical system in mechanical building. In foreground is a 60 hp, 208 volt drip-proof Westinghouse motor, driving a chilled water pump. 400 amp safety switch on wall feeds an autotransformer reduced voltage starter which cushions inrush current to assure smooth pump start-up.



Westinghouse CDP power distribution panelboards equipped with De-ion® circuit breakers control and protect feeder circuits supplying power to intricate mail handling equipment. Complex systematized handling system requires reliable power supply since local failures would seriously impair movement schedules. Famed De-ion principle of arc quenching assures maximum circuit breaker life by preventing burning and pitting contacts.

Westinghouse

J-94161-2



Five 100x400-ft warehouses form nucleus of Sukiran Marine Corps Staging Depot.

The Seabees at Work: Precast

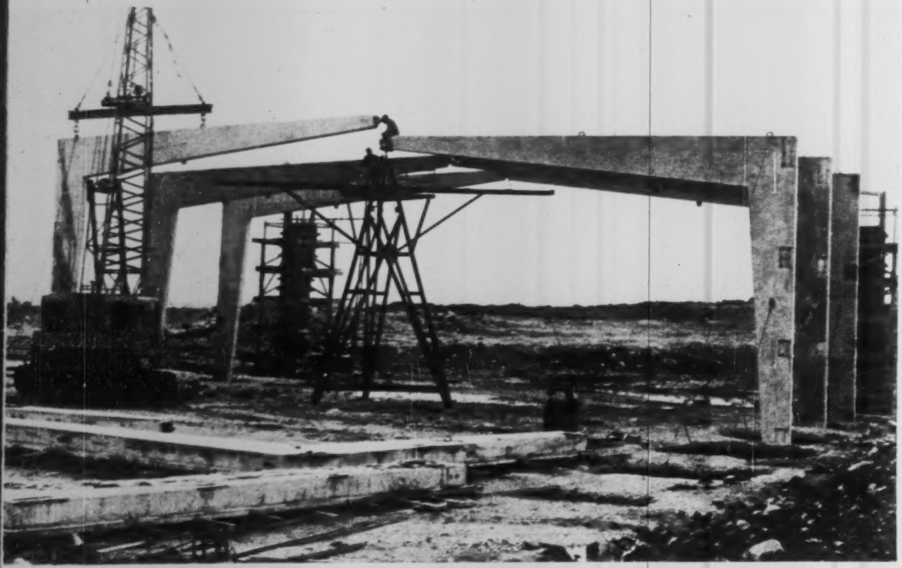
By Lauress L. Wise

Production-line precasting and precision in erection of members weighing up to 55 tons are features of current Seabee construction on Okinawa.

The work involves two Marine Corps projects.

One job—the Futema Marine Corps Air Facility—is the largest project ever constructed by a single Navy Construction Battalion (which in this case was MCB-3). It includes 65 buildings and, when completed in mid-1961, will have taken 3½ years to construct.

The other project—the Sukiran Marine Corps Staging Depot—centers on five 100x400-ft warehouses. It was built in two years. Three half-strength battalions were assigned to the work for about nine months each—these were MCB-9, MCB-11 and MCB-5.



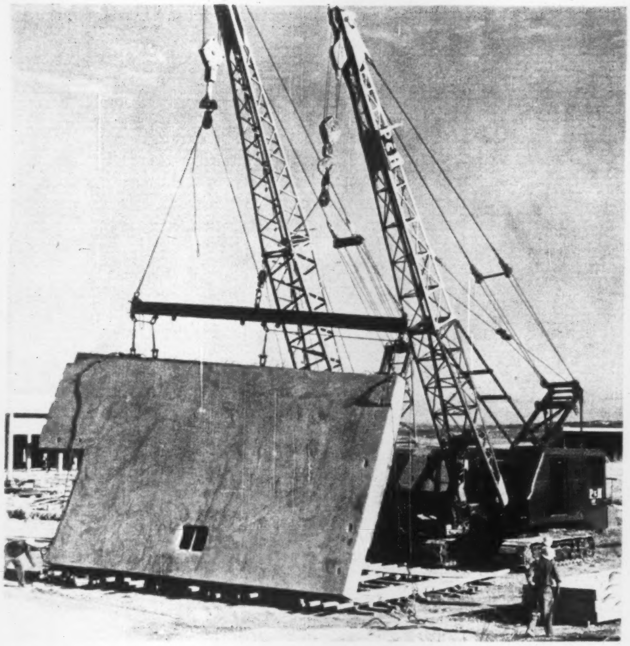
BOLTING OF RIDGE CONNECTION completes 94-ft gable span. Tripod temporarily supports half of a frame as other half is erected.

• Fast start needed—An early construction start was required for the Futema project. A Marine helicopter unit was scheduled for redeployment at Okinawa at the earliest possible time. This allowed no time for competition of plans and specifications before contract award and thus ruled out a lump-sum contract. Another reason for assigning the Seabees to this project was to develop their skills.

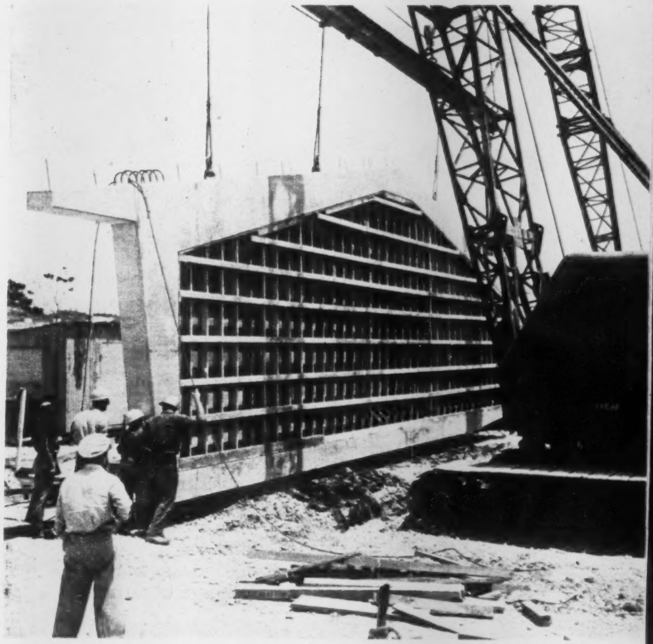
It was possible, however, to make a quick estimate of materials so they could be shipped from the U. S. in time for Seabee use. That could be done because the structures at Futema (and also at Sukiran) are patterned after Marine Corps facilities built at Twenty-Nine Palms, Calif. In addition, another Marine base with precast structures was under construction at the time on Okinawa (Camp Schwab) on a contract basis.

Heavy concrete construction is particularly adaptable to conditions on Okinawa. It can resist forces from typhoon winds up to 140 mph. And concrete buildings are rust resistant in the damp, semitropical climate.

This is the second of a pair of articles written by ***ENR's West Coast Editor Larry Wise*** *after a 17,000-mile trip to Seabee installations in the Pacific. His first article appeared in last week's issue.*



55-ton wall panel was heaviest to lift at Futema.



50-ton gable-frame panel forms end wall.

Concrete Frames Okinawa Buildings

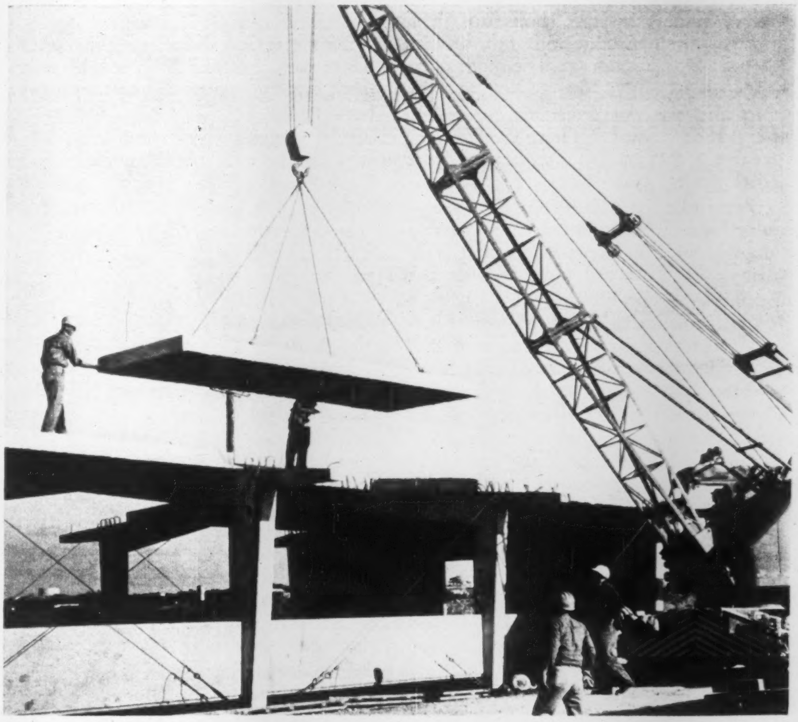
Cost of the Futema Air Facility is pegged at about $8 million. This does not include Seabee labor costs, which are charged to Navy operating funds. Futema is largely an industrial-type facility; it includes some 65 buildings, roads, water supply, electrical distribution, etc.

Another Marine base—Camp Hansen—is under construction by an Okinawan contractor. This job is a personnel base. An $11-million lump-sum contract for the 1958-building camp was awarded after competitive bidding.

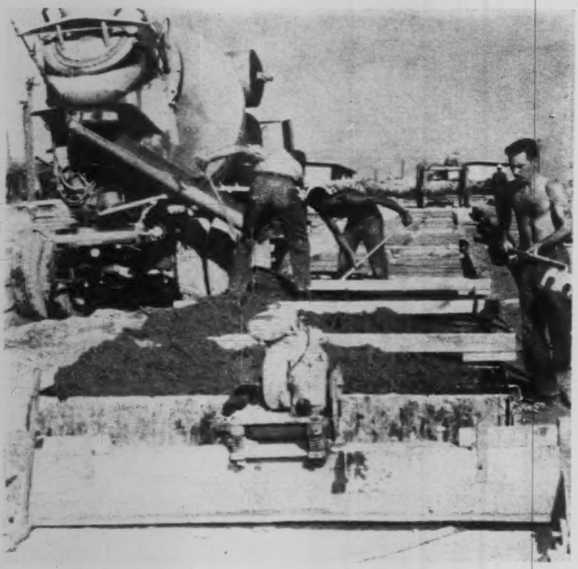
The cost difference for the project being built by the Okinawan contractor and the Seabee operation can be attributed to materials procurement practices and the low labor rates on Okinawa. The indigenous contractor can procure materials anywhere in the Far East—usually at less cost than can the Seabees, who must utilize government procurement systems. Additionally, while the Seabees utilize modern construction practices and heavy construction equipment, the indigenous contractor substitutes cheap labor to minimize mobilization and equipment costs.

• **Casting yard built first**—One of the first problems for MCB-3 when the Futema job was started in 1958 was to establish aggregate production and concrete batching and casting facilities. Aggregate used was native coral, but it required crushing to obtain proper sizes. And, after screening, the coral had to be handled carefully to minimize breakage. The aggregate plant also provided crushed rock for subbase material for the buildings.

(*Turn the page*)



SEABEES ERECT 2¼-ton typical ribbed roof panel spanning between bents. Cable X-bracing at columns provides stability during erection.



CASTING YARD served both the Futema and Sukiran projects. Seabees cast the ribbed roof panels.

STRADDLE TRUCK equipped with vacuum lift apparatus handled roof slab panels in casting yard.

The Futema project is built around a 9,200-ft World War II runway. Hangars, warehouses and other "industrial" facilities are on the east side of the runway. "Community" facilities (barracks, mess halls, headquarters buildings, etc.) are on the west side. Because more buildings were to be constructed on the west side, the batch plant and casting yard were located there.

• Roof panels by the thousands—The greatest single production item in the casting yard was a roof panel. The waffle-shape units for both the Futema and Sukiran projects were cast at the MCB-3 yard. There were more than 6,500 panels. A typical roof panel weighs 4,450 lb.

The ribbed panels were cast on concrete forms with steel sides. A paraffin-based separating compound coated the forms. Each of the waffle molds had a pinhole in the middle, which permitted air pressure to aid bond breaking.

The casting yard produced roof panels at the rate of 15 a day. Rain complicated much of the work on Okinawa. Casting work had to be carried out under canopies.

For much of the job the panels were removed from the forms by a straddle truck equipped with vacuum-lift apparatus. Thus the straddle truck could simply position itself over the slab, lift it off and move it to the storage area. Suspended from a truck-crane boom, the vacuum-lift apparatus was also used to place the slabs for much of the job.

Toward the end of the job, the vacuum-lift equipment wore out. The final slabs were equipped with lifting-pin inserts for erection by crane.

Also produced at the casting yard were 900 wall panels for the Futema job. Barracks wall panels weighed 4,450 lb; larger full-height panels for other buildings weighed 16,000 lb.

Two prevailing bent sizes at Futema were 30 ft and 52 ft. The 30-ft bents were manufactured in the casting yard; others were cast at the building site. High-early-strength cement permitted erection five days after casting, instead of 14 days.

• Bent erection—Most of the concrete bents were erected by a single crawler crane and guyed until stiffening members could be placed. Hangar bents were a special problem. These 94½-ft-wide units were cast in two sections. Each section was 34 ft high and weighed 27½ tons. The Seabees made a tripod to support the bents at midspan until a bolted connection could be made.

End walls for many of the buildings were designed to be cast in place. But the Seabees saw no reason why they could not also be precast. The 52-ft end wall of a mess hall building was precast. Total weight of the assembly including cribbing exceeded 50 tons.

These walls were erected by two heavy-duty crawler cranes working through an equalizer beam and using a four-point pickup. A lift such as this was impossible for the Okinawan contractor to duplicate at Camp Schwab or Camp Hansen.

Both the Futema and Sukiran jobs included extensive water and power installations. At Futema, a 750,000-gal concrete water tank was built by the Seabees on a nearby hill. Futema also included a 13,800-v power distribution system with 22 transformer substations. Some 5,000 ft of underground cable was installed for power use alone.

Extensive coral beds delayed work considerably.

• Planning effort—The Futema job was pegged at 380,000 man-days of direct effort. MCB-3 had about 1,000 men assigned, but at any one time some 250 of these were in the U. S. Thus, with 750 men on board, it was possible to get about 440 on direct labor. This meant that MCB-3 could tally about 10,000 man-days a month of direct labor.

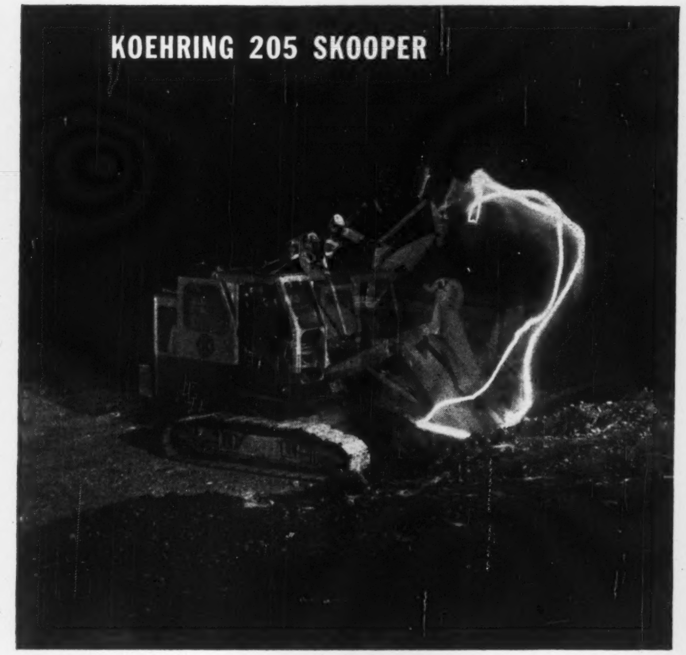
Sukiran was pegged at 10,000 man-days of effort. And since the Sukiran battalions were smaller units, the direct labor percentage was lower.

Another factor that had to be taken into account in planning was inclement weather. A Phase One typhoon alert required all men to return to their barracks and to wait until the all-clear. This would sometimes take 24 hours. Rainy weather also delayed work. Thus the planners figured on only 85% of the man-days as effective labor.

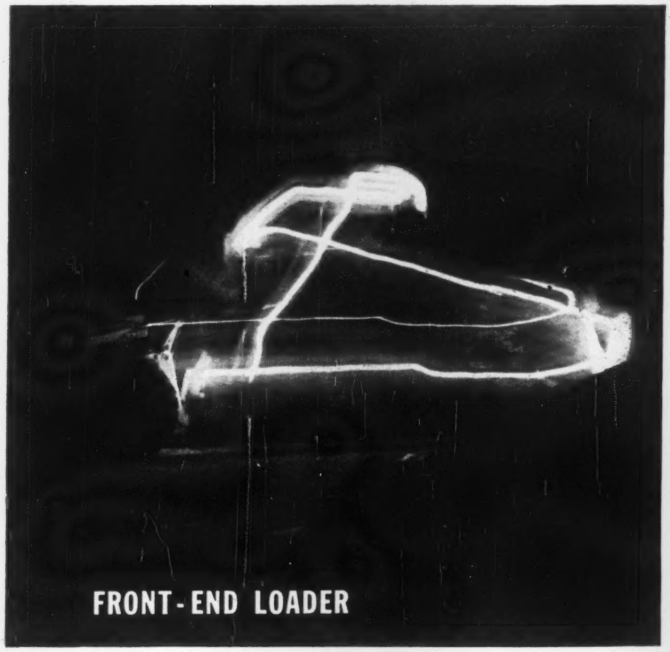
The Marine Corps bases on Okinawa were designed by Thomas B Bourne and Associates of Washington, D. C. The contract for construction of Camp Hansen is being administered for the Navy's Bureau of Yards and Docks by the Okinawa District, Corps of Engineers. The contractor is Kokuba Gumi of Naha, Okinawa.

During its 3½ years on Okinawa, MCB-3 had four different commanding officers including Capt. John M. Raymond, Jr., Cdr. Spencer R. Smith, Cdr. John F. Beaver and Cdr. John M. Daniels. Commanding officer of MCB-5 is Cdr. John Richey.

"RIVERS OF LIGHT" SHOW HOW SKOOPER OUTPERFORMS FRONT-END LOADER



SKOOPER'S standstill loading creates a light pattern that's short and compact . . . not long and extended like the one for the loader!



Cycle Test Proves SKOOPER Best!

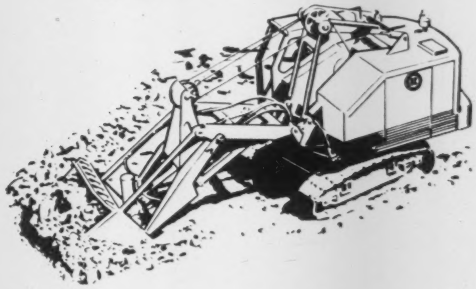
Shown here are actual time-exposure photographs of a Koehring 205 SKOOPER and a rubber-tired front-end loader of similar bucket capacity going through actual digging and dumping cycles under identical conditions. A light was attached to the bucket of each machine and the light pattern traced by each bucket was recorded by time exposure photography.

The light patterns show that with SKOOPER, all motion means work . . . there are no flying starts, no spinning tires, no churning crawlers, no waste drive-in, back-off motion . . . SKOOPER stays in one spot and really bails dirt, delivers big loading tonnages, using less horsepower with less maintenance!

See your Koehring distributor for complete details on the profit pattern that SKOOPER can produce for you!

K-100

There's Nothing Like it on Wheels or Tracks!



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DIVISION OF KOEHRING COMPANY
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INTERSTATE
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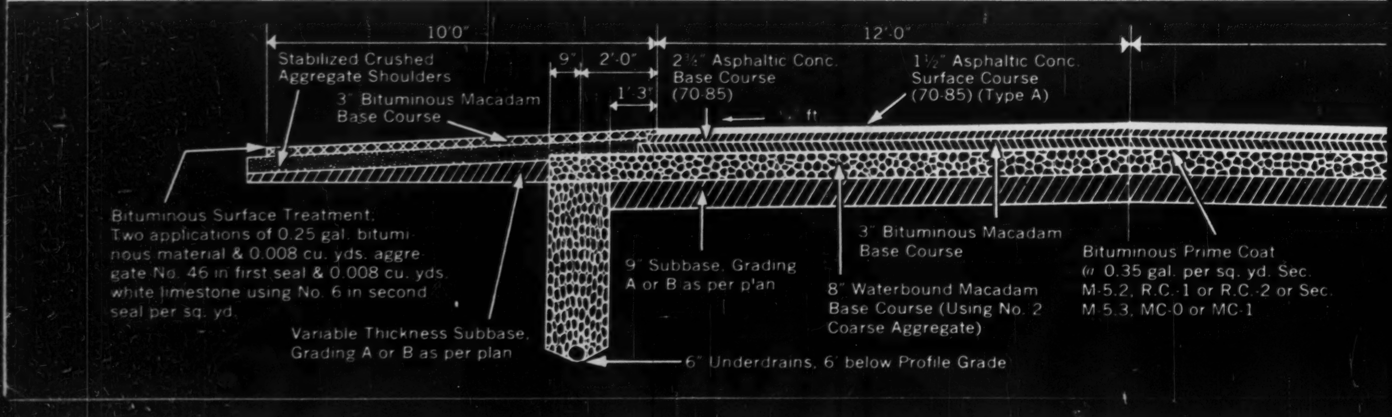
71

For strength and durability, 7¼ inches of Asphalt surface and base are laid on 17 inches of compacted aggregate.


10'0"
12'-0"
9"
2'-0"
1'-3"
Stabilized Crushed Aggregate Shoulders
3" Bituminous Macadam Base Course
2½" Asphaltic Conc. Base Course (70-85)
1½" Asphaltic Conc. Surface Course (70-85) (Type A)
ft
Bituminous Surface Treatment; Two applications of 0.25 gal. bituminous material & 0.008 cu. yds. aggregate No. 46 in first seal & 0.008 cu. yds. white limestone using No. 6 in second seal per sq. yd.
Variable Thickness Subbase, Grading A or B as per plan
9" Subbase, Grading A or B as per plan
3" Bituminous Macadam Base Course
8" Waterbound Macadam Base Course (Using No. 2 Coarse Aggregate)
Bituminous Prime Coat @ 0.35 gal. per sq. yd. Sec. M-5.2, R.C.-1 or R.C.-2 or Sec. M-5.3, MC-0 or MC-1
6" Underdrains, 6' below Profile Grade

New Section of Interstate 71:

First DEEP STRENGTH Asphalt Paved Interstate Highway in Ohio!

Traffic is now rolling on the first DEEP STRENGTH Asphalt paved Interstate Highway in Ohio. Serving a highly industrialized area, this new 17-mile section of Interstate 71 will be subjected to heavy freight traffic.

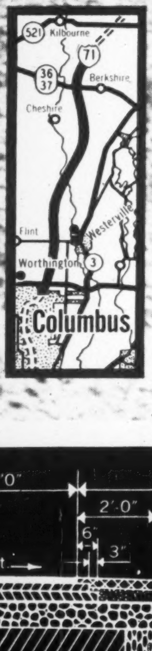
That's one reason why Ohio State highway engineers chose DEEP STRENGTH Asphalt pavement. Notice in the cross-section drawing (below) how design follows precepts of DEEP STRENGTH Asphalt construction . . . heavy-duty Asphalt concrete surface course . . . heavy-duty Asphalt base . . . Asphalt primed subbase . . . **depressed median and deep longitudinal drain on outside and inside shoulders for good drainage** . . . heavy proof-rolling of subbase . . . and use of high-contact pressure pneumatic proof-roller on all other courses. HERE IS STRENGTH AND DURABILITY!

When built like this—for DEEP STRENGTH—Asphalt pavements will carry heaviest traffic loads without distress . . . and with minimum maintenance cost.

And, most important, Asphalt pavements built to this Advanced Design Criteria can often save money over the cost of Asphalt pavement designed to other standards. That's because the Advanced Design Criteria permit inexpensive Asphalt base to be substituted, within limits, for more expensive Asphalt concrete surfacing, and allow reduction in total structure thickness when used in place of untreated base.

NEW HANDBOOK! A new edition of the *Asphalt Handbook* incorporating all the Advanced Design Criteria implied by the term DEEP STRENGTH Asphalt pavement is now available. Write to The Asphalt Institute.

New DEEP STRENGTH Asphalt section extends northeast paralleling existing U. S. Route No. 42.

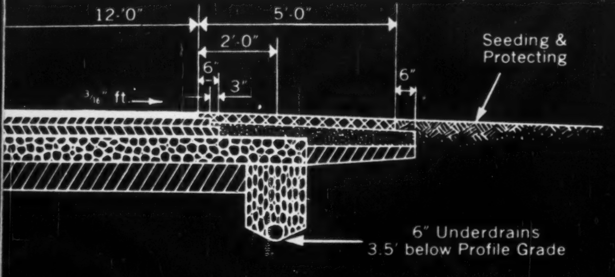


For smoother riding, the subbase was proof-rolled with a 50-ton compactor using tire pressures of 150 psi. A 30-ton rubber-tire compactor with tire pressures of 120 psi was used on all other courses.

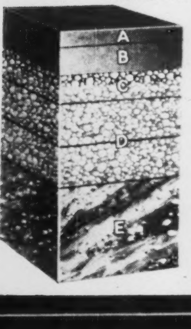
For good drainage, section was designed with a depressed median and a system of deep longitudinal drains on each side of travel lanes to prevent water from entering the foundation courses.

THE ASPHALT INSTITUTE

Asphalt Institute Building, College Park, Maryland



HERE IS **DEEP STRENGTH** DESIGN
ON OHIO INTERSTATE 71



A. 1½-inch Asphalt concrete surface course

B. 2¾-inch Asphalt concrete base course

C. 3-inch penetration Asphalt macadam base course

D. 2—4-inch water-bound macadam base courses

E. 9-inch selected gravel subbase

Montana Contractor carves US-89 in the Belt Mountains with JOY Drill and Compressor Team

Working at high altitudes in hilly, broken ground is a tough job for any drill and compressor team. McLaughlin, Inc., Great Falls, Montana is excavating 170,000 yards of rock along US Highway 89 on "Kings Hill" near Niehart, Montana. The job calls for extreme mobility and versatile equipment. The material is quartzite, and is badly broken with many seams. The Joy TDM Trac Drill with 450-DR Dual Rotation drill is averaging up to 390 feet of three inch hole per eight hour day. Working straight through the winter months, the 600 foot Airvane rotary compressor starts on the coldest days and keeps on running. An exclusive thermal by-pass oil system assures adequate lubrication and fast warm-up, even during below zero temperatures.

If you have a job coming up where conditions will be extra difficult see your Joy distributor for complete information on Joy Trac Drills and compressors, or write for bulletin 2899.

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JOY

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In Canada: Joy Manufacturing Company
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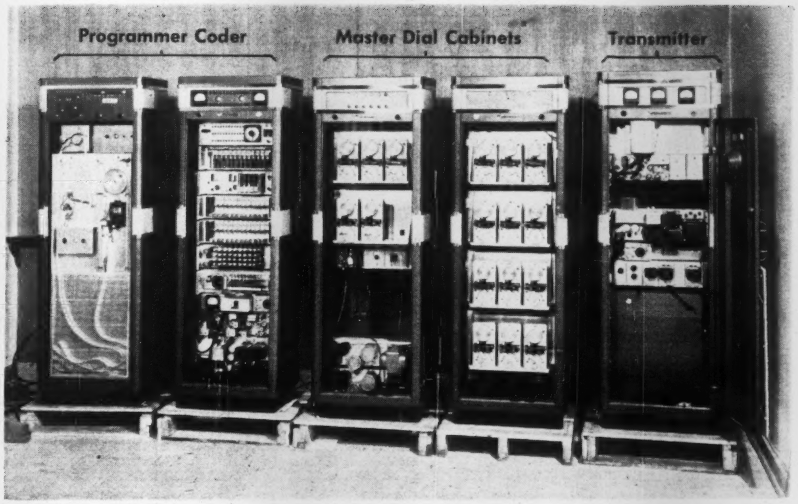
ANTENNA mounted on control box eliminates need for underground cables.



CENTRAL STATION contains four units that feed audio tone combinations by wire to radio transmitter (right) which controls traffic signals.

Radio Controls Traffic Signals

A radio-controlled traffic signal system is proving a boon to street and road departments, motorists, traffic engineers and police in three cities.

Washington, D. C. has an extensive system of controls at 825 of its more than 1,000 signalized intersections and is now adding 66 additional installations; Detroit has permanent radio controls at 50 intersections; and New York City, which is now testing radio controls at eight intersections, plans to install them at 50 crossings within the next year. A fourth city, New Haven, Conn., expects to start building a 20-intersection network soon.

This system for reducing traffic congestion has many advantages over previously used methods. Among them:

- **Economy of installation**—radio controls can be installed on unconnected signals for as little as $15,000 a mile as compared to the $50,000-a-mile cost for the nearest thing in a cable connected system.
- **Reduction of traffic dislocation**—because the radio controls require no underground wires, it is unnecessary to tear up streets and sidewalks, barricade intersections, and patch pavements to install them.
- **Centralized control** – from one point it is possible to cycle or recycle an entire traffic signal system covering up to 1,000 intersections.
- **Flexibility of signal patterns**—any one or combination of 36 different signal operating possibilities can be set in any sequence in any location or group of locations by one man at the master control panel.
- **Fast recycling**—from the master control panel, the cycling or recycling of all or any part of an entire traffic signal system can be accomplished almost instantaneously.

Basically, the system consists of electronic programming equipment in a centrally located station, a radio transmitter and antenna system at a strategically located position, and combination receiver-decoders for the traffic signals at the street intersections.

The central station contains a programmer with master clock, coding and synchronization apparatus. It also contains an illuminated display and control panel for a visual check on operations. (In the Washington system, this equipment is duplicated at a second location to provide complete stand-by protection, especially in Civil Defense applications.)

Operational information from programmer and synchronizer are fed into the coder, which generates audio tone combinations and transmits them over a single pair of wires to the radio transmitter.

This centralized radio traffic control system does not directly control the traffic lights. Instead, it provides contact closures for the standard signal controllers.

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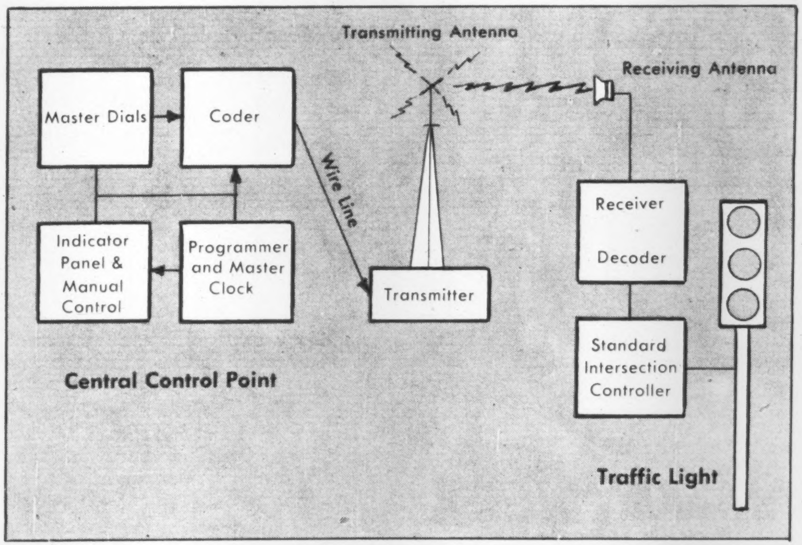

THREE BASIC ELEMENTS of the radio traffic light control system used in Washington are central control, radio transmitter and receiver.

(Advertisement)

Building up Seawall at Baltimore Marine Terminal. Contractor, Empire Construction Co., Baltimore

Symons Steel-Ply Forms Used in Tight Quarters

Three 6-foot-high walls, each 1200 feet long, with an additional 200 feet curved section at the outer end had to be formed within a working space of 39 feet, measuring inshore from the existing seawall.

Empire used Symons Steel-Ply Forms for the work which required perfectly aligned forms so that there would be no trouble when installing rails for the craneway. Some 6,300 feet of Symons Forms were in use at one time. Attachment was simple, and a minimum of skilled carpenter time was required for the work. All this eased the work of erection, stripping, and storage. The forms were particularly valuable in work on the tapering edge of the buildup on the seawall and the curving sections of the walls.

Symons Forms are rented with purchase option. Symons Clamp & Mfg. Co., 4265 Diversey Avenue, Dept. C-1, Chicago 39, Illinois.

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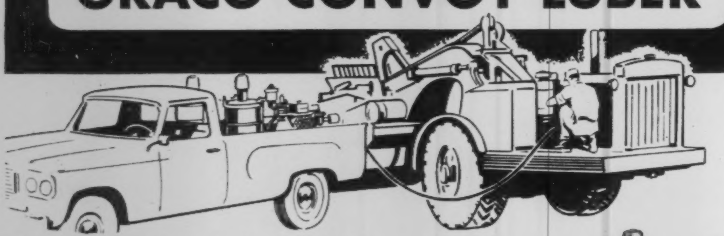

Strict schedules demand top-notch efficiency and rugged service from construction equipment. That's why a Graco Convoy Luber actually pays for itself by helping to prevent costly breakdowns.

Several sizes to choose from, or custom assemble luber components to fit your own particular job. These lubers provide fast greasing, oiling and air service in the field. You pump lubricants direct from original drums *on the job site*.

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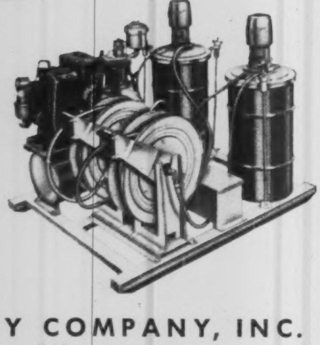

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See Phone Book Yellow Pages "Lubricating Equipment" for Graco Suppliers

Radio signals from the transmitter are received by the fixed antenna and receiver-decoder mounted on top of the existing traffic controller. The decoded information is then converted for use by pre-timed signal controllers.

The system provides its control through audio tone combinations. Four tones select the traffic signal location. Two other tones actuate the control mechanism, while an additional series of tones keep the traffic signal operating in synchronization within the system.

The receiver-decoders monitor all generated tones continuously. When the appropriate six-tone combination is received, an electrical relay is closed and the signal light responds accordingly. This may take the form of switching time intervals for different red, green and caution periods, for example, or for special functions such as flashing lights or signs.

The system, developed by Motorola, Inc., is based on two-way radio selective signalling techniques used for several years in aircraft, police vehicles, taxicabs and highway department vehicles where the operator receives only those radio messages intended for him.

As an added feature, the intersection decoders without their radio receivers can be used within groups of cable connected intersections. This is done in the Washington, D. C. system, which includes a network of cable-connected traffic signals at 600 intersections.

The Washington system, which has been in operation since September of 1959, provides programming for this large central block of cable connected intersections and radio control of 125 intersections in outlying parts of the city.

The city is currently adding 66 new installations. Of these, 45 are receiver-decoders to tie isolated traffic signals or small groups of cable-connected signals into the system. The other 21 are decoders only, installed at cable-connected intersections to provide individual signal control within already joined blocks, now radio-controlled as units. Contract cost of furnishing and installing the 66 units is $135,000.

Basically, Washington, New York, and Detroit are using the same Motorola system of radio-controlled traffic signals. In each case programmed information is converted into tone codes which are radioed to transistorized receiver-decoders where they are decoded into relay closures and fed to a standard intersection controller. The only difference is in the programming device at the central station. Washington uses a punched tape; New York uses punched cards; Detroit uses a mechanical drum. The mechanical drum has a smaller capacity than the punched tape and card devices, but all three are equally effective.

NEW CONCEPT

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A true 7-strand wire rope — 7 strands around an independent wire rope core

There's no other wire rope like it! Macwhyte combines all desirable wire rope characteristics in a single ALL-PURPOSE rope!

We think you'll be as excited as we are about 7-FLEX! This is the kind of rope you've been hoping for. It's as flexible as an 8-strand rope—as rugged as 6 x 19—and resists fatigue like 6 x 37.

7-FLEX has 16⅔% more wearing surface than 6 strand rope. There is less unit pressure between rope and sheaves, so less rope and sheave wear. There is more sheave contact, less rope-creep. Result — longer rope life — less down time — lower operating costs!

The all-new 7-FLEX is a PREmium high-quality, high-strength PREformed and internally lubricated Macwhyte Rope.

You'll want to install this rope on equipment applications like these:

- Crowd and hoist rope on scraper wagons
- Holding and closing lines on clamshells
- Shovel and drag line hoist ropes
- Digging lines on small excavators, trench hoes, etc.
- Boom hoist lines on excavating equipment
- Hoist and swing lines on dredges and derricks

Ask any Macwhyte distributor or write for bulletin 60100-R.

241A

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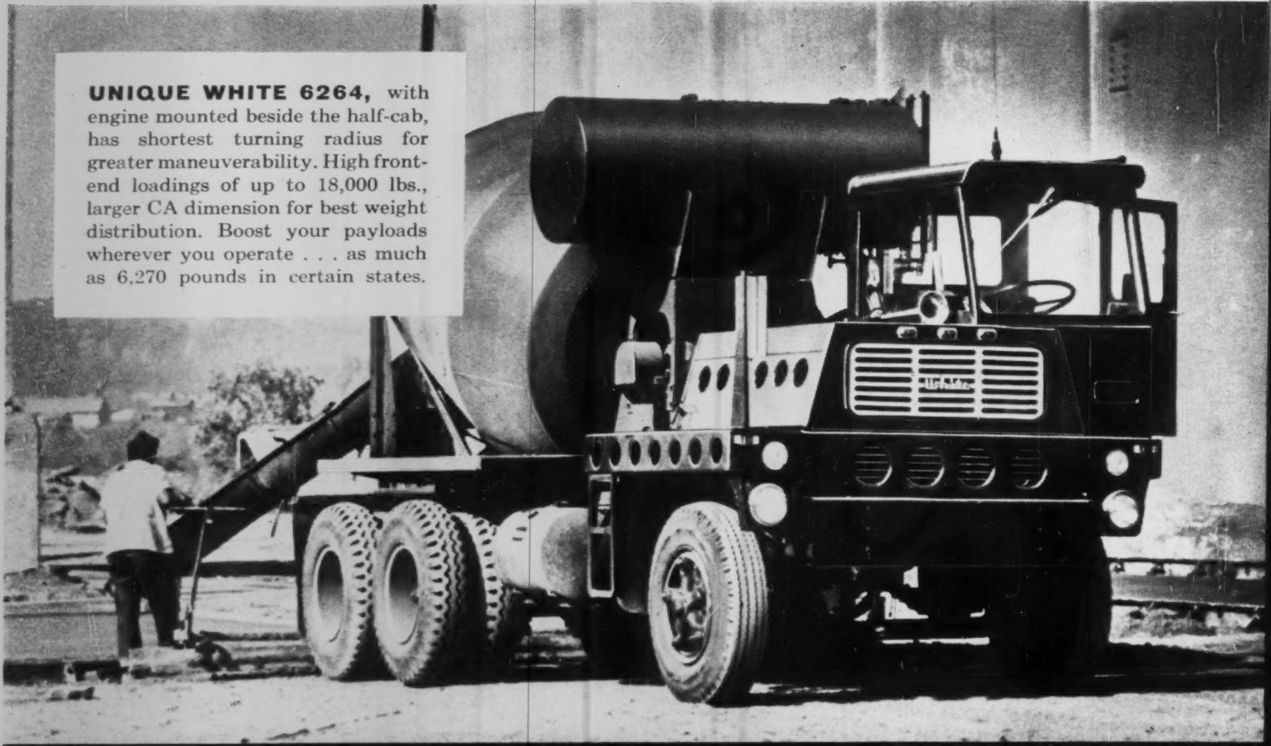
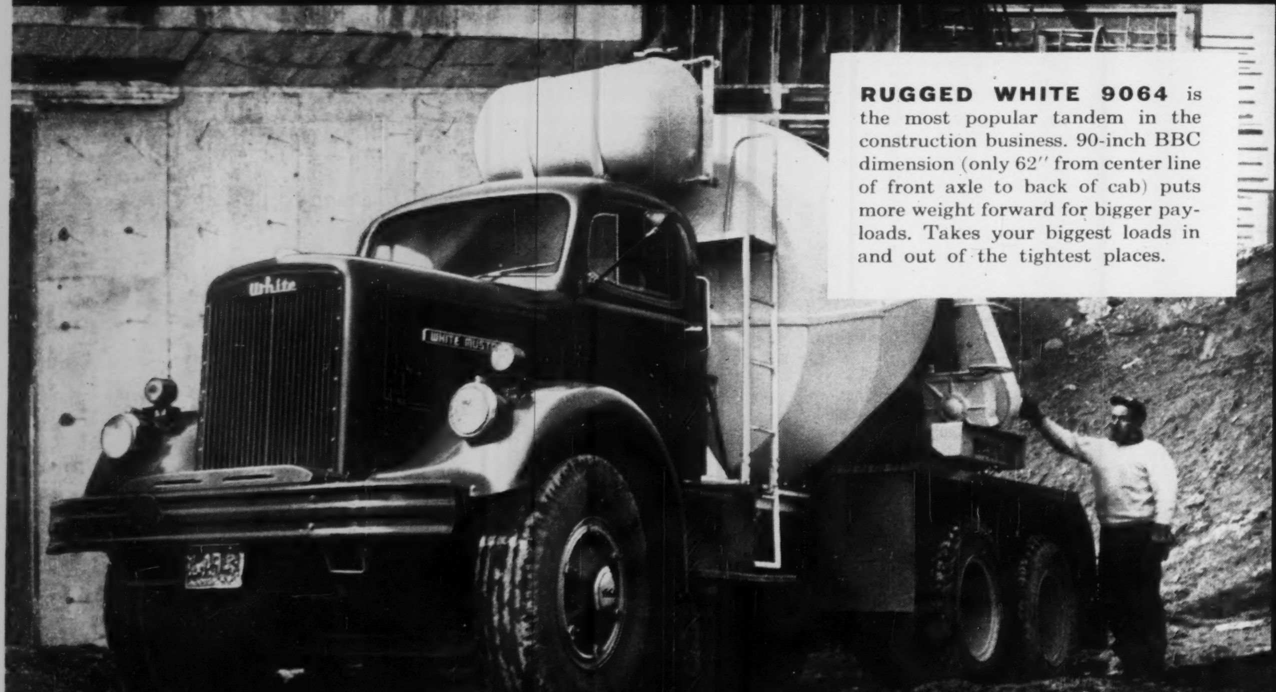
Wire Rope Manufacturing Specialists Since 1896



UNIQUE WHITE 6264, with engine mounted beside the half-cab, has shortest turning radius for greater maneuverability. High front-end loadings of up to 18,000 lbs., larger CA dimension for best weight distribution. Boost your payloads wherever you operate . . . as much as 6,270 pounds in certain states.

BUSINESS



RUGGED WHITE 9064 is the most popular tandem in the construction business. 90-inch BBC dimension (only 62″ from center line of front axle to back of cab) puts more weight forward for bigger payloads. Takes your biggest loads in and out of the tightest places.

NEW WHITE 4264S tandems cost less to buy, less to operate, less to maintain. Heat-treated, alloy-steel frame, quality nut-and-bolt construction for durability, extra-capacity drive components. Choice of engine flywheel power take-off or provision for front engine mounted power take-off. Super-Mustang gasoline or Cummins "C" Series diesel engines.

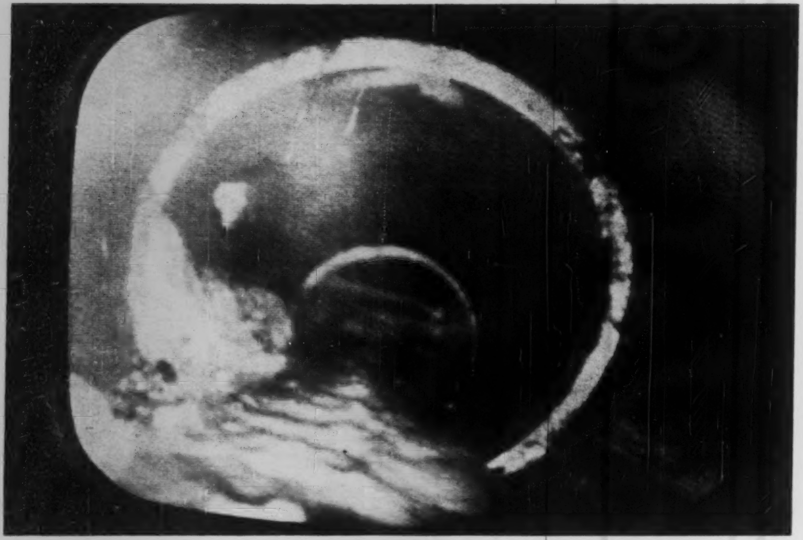
BOOSTERS

designed by ***WHITE*** to do more work in less time... at lower cost

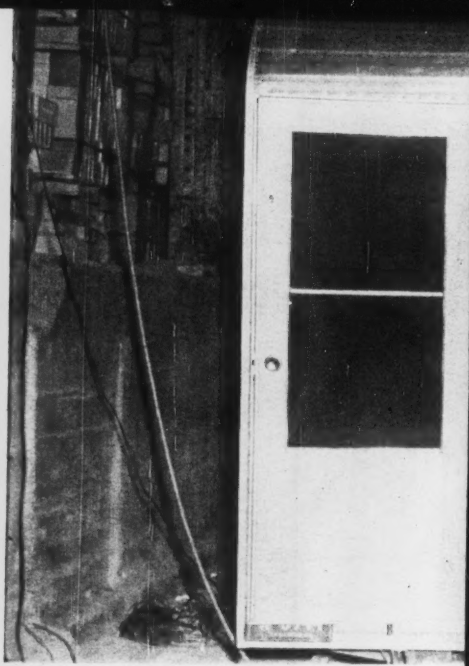
The construction industry demands trucks custom-engineered to fit the exact needs of each particular operation ... trucks like the Whites shown here. Ask for a demonstration. The White Motor Company, Cleveland 1, Ohio. Branches, distributors and dealers in all principal cities.

WORLD LEADER IN HEAVY DUTY TRUCKS

WHITE TRUCKS



Video view of sewer pipe interior provides . . .



Painless remote-control inspection

Closed Circuit TV Is Boon for

By Harold Rudich

Sewer inspection by TV has saved the city of Springfield, Ill., $200,000. And the technique has paid off in many other towns, too.

For 10 years, every heavy rain in Springfield backed up sewer effluent into the basement of a downtown commercial building. Clogging of an elliptical 36x42-in. sewer adjacent to the building was suspected, but rodding failed several times to reveal any obstructions in the 300-ft line. Finally, a property owner's threat to sue the city brought action.

Springfield's Public Works Commissioner Owen J. Darling called in our firm, and we quickly solved the mystery.

After traversing about half the pipe, our cylindrical TV camera revealed a spot where part of the pipe wall had crumbled. The rods used in previous inspections had simply slithered past the gaping void, since there wasn't enough debris to stop them. Replacing the deteriorated section ended the trouble.

TV's big advantage as a sewer inspector is its ability to pinpoint the location of cracks, open joints, misalignments, and other sources of leakage and backups. Conventional methods, such as visual inspection and rodding, are seldom able to do this. Also, TV detects deterioration which older techniques miss. The reduction in repair costs produced by using TV, instead of conventional methods, is usually considerable.

The benefits of the new technique are especially apparent in lines too small to admit a human inspector. But even in the bigger pipes, TV offers significant advantages.

Crawling through a sewer line is pretty uncomfortable work at best and often extremely dangerous as well, because of gas. Elaborate safety measures and extensive preparations are almost invariably necessary.

TV largely eliminates this problem and enables officials to see at least as much from a comfortable, air-conditioned, mobile TV studio as they could by worming through a dirty, malodorous pipe.

TV inspection of sewers has been the hero of a number of municipal budget dramas.

In Lombard, Ill., near Chicago, a subdivider, unable to find the stubs installed in a sewer line built two years earlier, went ahead and installed new ones and presented the municipality with a bill for the job. Town officials were understandably reluctant to pay it, and decided to inspect the line with TV to locate the original stubs.

The camera found the original stubs quite easily—and also discovered that they had been installed in the wrong locations. Armed with this evidence, Lombard officials had little difficulty persuading the sewer contractor to pay for the new stubs.

In the same community, the camera discovered a clump of tree roots blocking the flow in a 30-year-old storm sewer, causing a backup several blocks away. Lombard's primitive rodding equipment and limited finances had prevented more than a cursory inspection in the past. The new technique "was by far the most economical solution to our problem," reports Village Manager C. A. Willis.

In Evansville, Ind., several blocks of slums were about to be razed for an industrial development. About 5,000 ft of 18-in. to 60-in. sewer, 70 years old, ran under the area. These mains were apparently in good condition; at least there hadn't been any trouble. But city officials were suspicious; existing flows were far below the system's design capacity. So they spot-checked the mains with closed circuit TV.

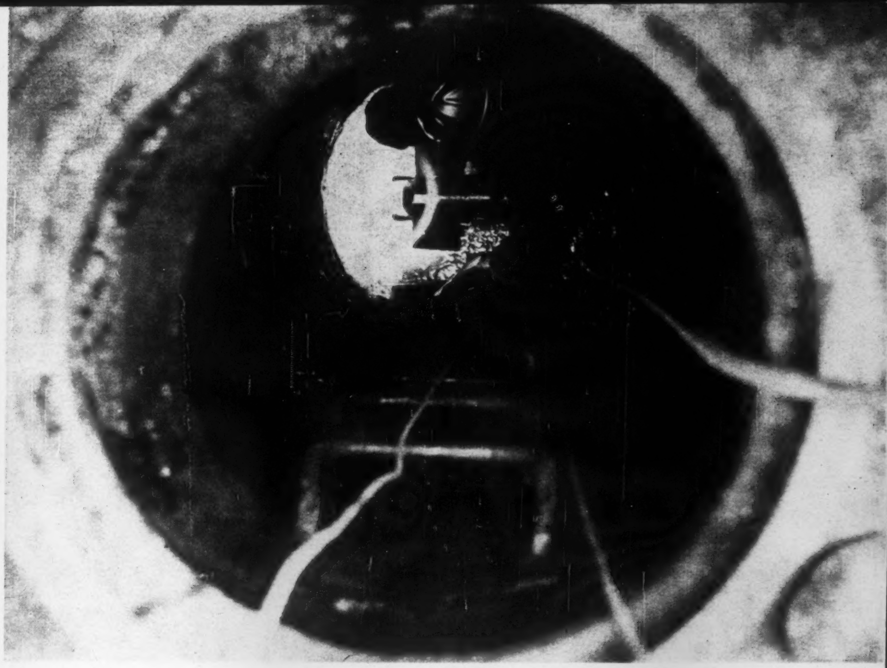
The camera discovered many cracks; it was obvious that with the higher flows anticipated from the new factories, the system would leak badly. On the strength of what the camera showed, the Evansville Redevelopment Commission ordered the mains rebuilt. City Engineer Sam Biggerstaff says that doing the job before instead of after the plants were completed cut costs over 60%.

In another section of Evansville, pavement collapsed above a 400-ft-long, 60-in. sewer lying 37 ft below grade. City officials suspected infiltration of subsoil into the line and sent a workman down to investigate. But he was felled by blackdamp (mainly carbon dioxide). Again the video inspector was put into service.

Mr. Rudich is President of National Power Rodding Corp., Chicago, specialists in pipeline cleaning.

KEEP OUT
DANGER
HIGH VOLTAGE

of large and small sewers.



Worker in manhole readies camera for a subterranean tour.

Armchair Sewer Inspector

The TV camera found a section approximately 142 ft long with a badly cracked crown. It was nearly choked shut with soil. By pinpointing the trouble, the city reportedly saved nearly $40,000 in excavation costs. "TV probably wasn't the only method of inspecting this line," Mr. Biggerstaff points out, "but we're convinced it was safer, more economical, and provided more information than any other."

More than once, TV inspection has saved communities the cost of rebuilding structurally sound sewers. In Highland Hills, a Chicago suburb, an 8-in. line was backing up so badly that water gushed out of the manholes during heavy rains.

The camera found no structural failure, but it did locate several connections into the line that had never been recorded. The connections were apparently the work of "midnight plumbers," for each was badly installed and projected into the line two or three inches, seriously obstructing the flow.

Not far away, a builder was about to put up several new homes in a North Riverside area served by a 12-in. line believed to be badly deteriorated. It was over 60 years old and had been out of service at least half that time. The camera, however, showed that it was still in serviceable condition.

Operations at a sewage treatment plant in West Dundee, Ill., were being seriously hampered by infiltration in the system. The flow into the plant was 50,000 gpd, higher than the community's daily water consumption.

By blocking off various sewers and then checking for leaks, officials discovered that a 15-in. line, running 1,000 ft alongside the Des Plaines River, was producing most of the excess. At first they thought the whole pipe would have to be dug up and replaced, but a TV camera showed that three open joints were responsible for most of the infiltration. Here again, by pinpointing the site of the trouble exactly, TV reduced repair costs appreciably.

In Morton Grove, Ill., television inspection uncovered another leaky-joint problem. Water was seeping out of a storm sewer and infiltrating house lines connected to a sanitary sewer grid. Heavy rains filled the sanitary sewers and caused sewage to back up through the service lines into basements.

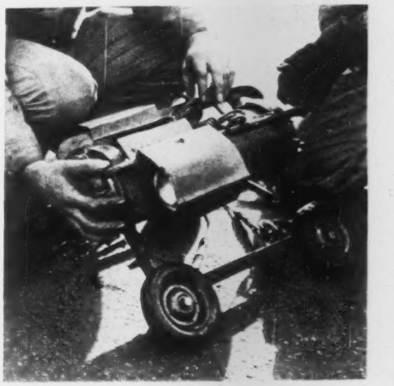
Village officials and engineers are now working up a plan to repair the joints from inside avoiding excavation.

. . . How It Works

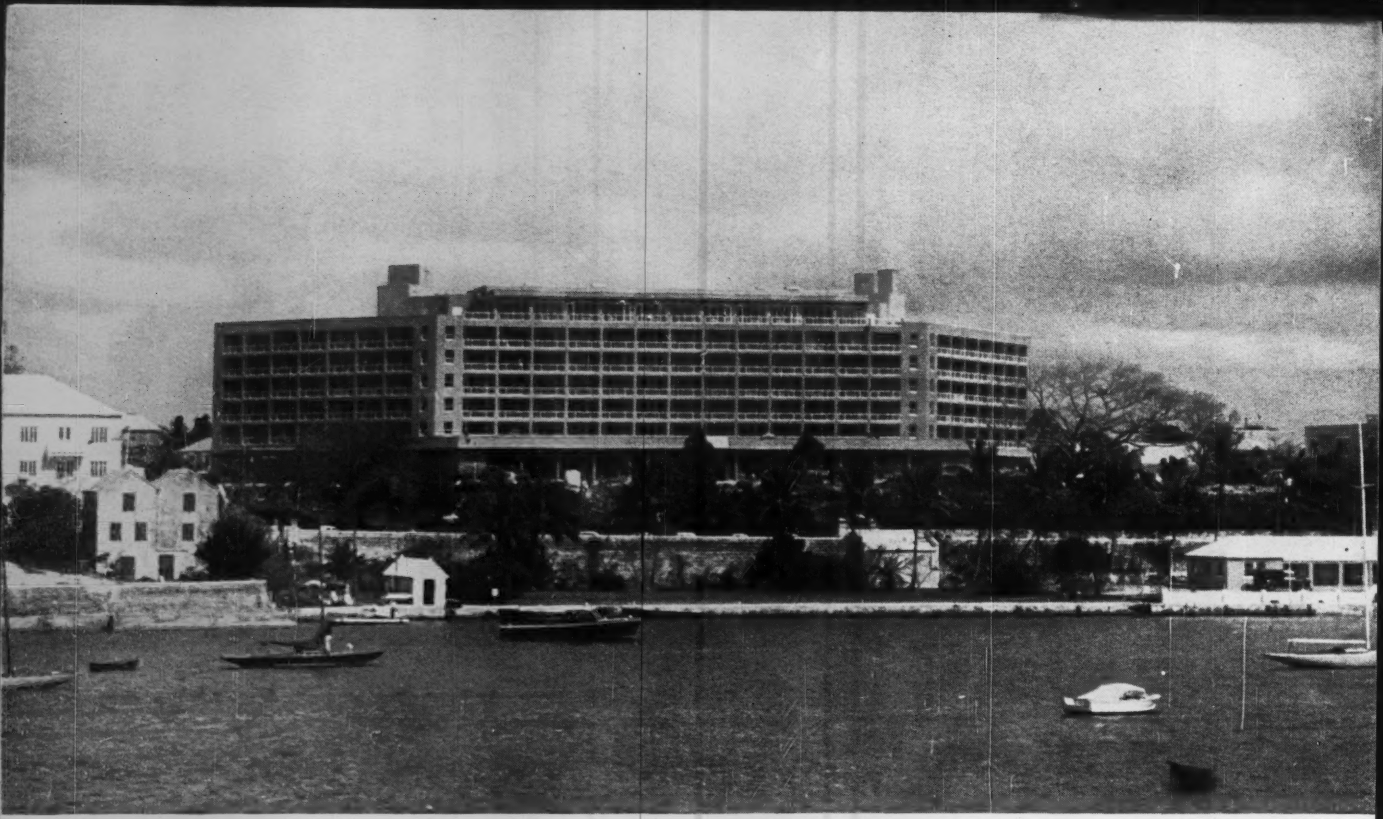
The television camera used is encased in a stainless steel tube 19 in. long and 5½ in. in dia. It passes through pipes 8 in. or larger. The firm also has a slimmer model, 3½ x 19 in., which will negotiate pipes with diameters as small as 4 in.

In either case, a high-speed, wide-angle lens at the front of the tube views everything within a 45 deg angle. A waterproof cable carries the picture to a 17-in. TV receiver installed in a trailer on the surface. The image on the screen is generally clear enough to be photographed to provide a permanent record.

The camera rig can be mounted on a raft, skid, or wheeled platform (right). Two 600-watt photoflood lamps alongside the camera provide illumination as the camera is towed through the sewer on the end of a steel cable connected to a sewer rodding machine. This arrangement permits the camera's rate of travel to be adjusted precisely. A measuring device on the rodding machine indicates the distance traveled so that defective pipe can be located exactly.



A power winch cable fastened to the rear of the video unit trails behind and can be used to reverse direction for a second look. Pipe runs of up to 1,000 ft, manhole to manhole, can be inspected.



THE BERMUDIANA stands again as a majestic landmark dominating Hamilton Harbor in Bermuda. Steeltex by Pittsburgh Steel Co. went into the 280,000 square feet of concrete floors in the plush six-story hotel. E. G. M. Cape International, Ltd., was able to meet a tight construction schedule.

The Bermudiana Opened On Time—Steeltex Helped—Cut Costs, Too

Bermuda's beautiful Bermudiana Hotel again is dominating the majestic harbor at Hamilton.

Only the memory of the fire-ruined old Bermudiana remains. In its place is a six-story, 225-room, steel-frame structure with concrete floors reinforced by Pittsburgh Steel Company Steeltex.

Costing $5 million, the new Bermudiana represents the largest single, non-military, construction project in the island colony's past 31 years.

One of Canada's oldest and largest contractors—E. G. M. Cape International, Ltd.—built the new Bermudiana. It was a race with the calendar and a prolonged bout with the toughest kind of logistics on delivery of construction materials.

• **Contractor Won**—The Montreal-based contractor won and the Bermudiana welcomed its first guests just 14 months and 3 days after the contract was let for demolition of the charred ruins of the first Bermudiana.

Part of the credit for winning the race goes to Steeltex, the welded steel wire concrete reinforcement that carries its own waterproofed form on its back.

Steeltex was a natural for the Bermudiana job. Here's why:

• The island of Bermuda has no commercial lumber, so wood forming would have required costly, imported lumber. Steeltex combines form and reinforcing all in one.

• Steeltex saves labor. All skilled and experienced labor had to be brought in, mostly from Canada and mostly by air. In addition, the contractor had to set up a camp and service it.

• Steeltex' welded wire fabric is galvanized. On the Bermudiana job, this assures continuing protection of reinforcing against the corrosive elements of a tropical climate.

• But the big advantage was the speed of Steeltex installation. Cape Construction Superintendent Rhys Davies estimated wood forms would have required a crew of up to 60 men. The Steeltex installation required four men.

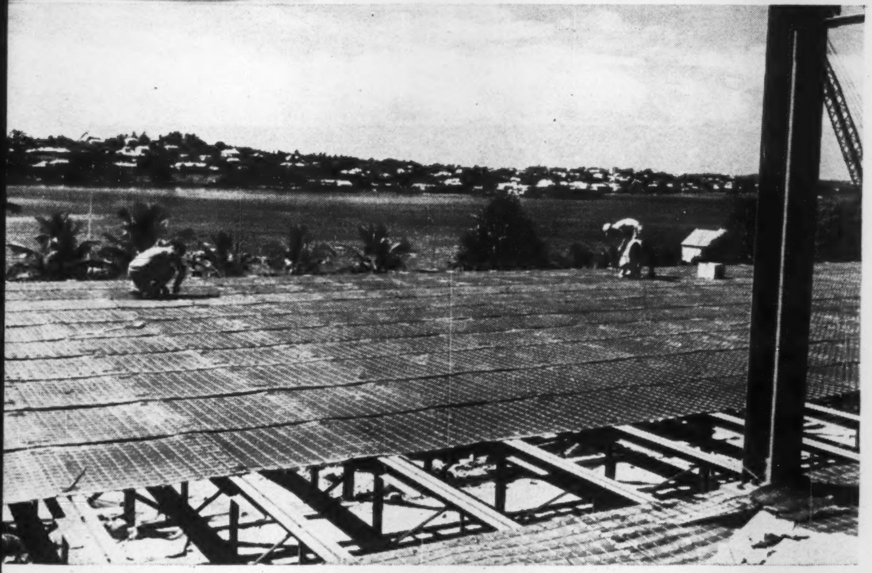
"Fifty percent of the cost at the site," Mr. Davies explained, "is labor. That's why we like a product such as Steeltex, which is preassembled and saves on-site labor costs."

• **Tourist Rush**—To get the full story of the new Bermudiana, you have to go back to a September afternoon, when a small fire broke out on the Bermudiana's fifth floor. It spread quickly and soon blazed out of control. Bermuda's greatest single disaster was in full progress.

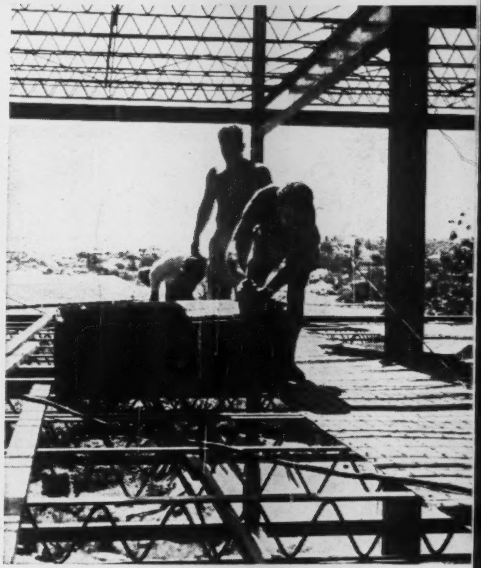
A major chunk of available hotel rooms was lost to the vital tourist industry.

Sir Harold Wernher, Bermudiana owner, announced his determination to re-build. Confronting him, however, was an immutable deadline imposed by rigid limits of Bermuda's tourist season. If the hotel couldn't be ready in time, it would be better to wait another year.

• **Big Obstacle: Time**—E. G. M. Cape was named as a single general contractor. Five days after getting the contract, Cape had its first crews on the scene.

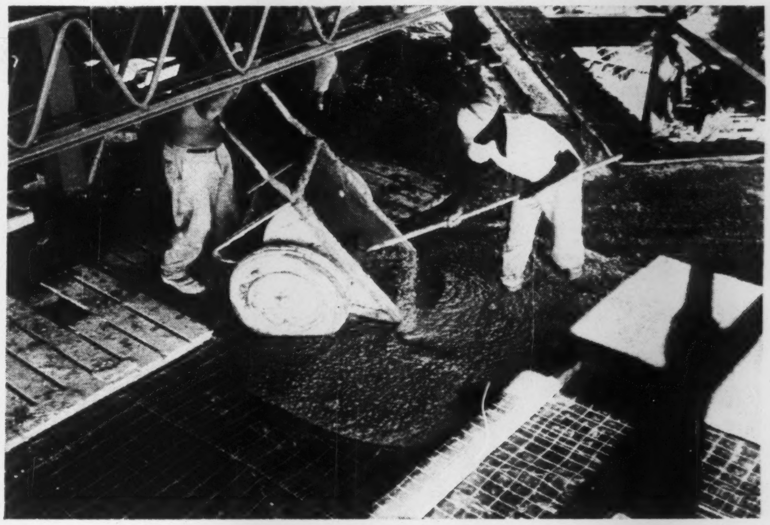


FOUR MEN laid Steeltex, which reinforced concrete in the Bermudiana's floors. Steeltex' galvanized fabric assures protection against corrosive elements of tropical climate. Above, crew is working on 60 by 200-foot floor for main dining room.



CONSTRUCTION WORKERS had to be flown into Bermuda, so saving labor was nearly as important as saving time. Here, a two-man crew unrolls the welded-wire Steeltex.

CONSTRUCTION SUPERINTENDENT Rhys Davies, above, said ease of installing Steeltex permitted concrete work to stay on schedule, one day behind structural steel erection crews.



STRONG, NEAT base of Steeltex gets its concrete. Waterproofed backing of Steeltex held moisture, permitting better curing of the slab. Labor costs of clean-up on floors below were eliminated.

All three factors influenced Cape's choice of a method to pour concrete floors. Pittsburgh Steel's Steeltex got the nod here for the 280,000 square feet of floors. Cape officials had been impressed with Steeltex on a number of building jobs in Canada, and liked Steeltex' economy and versatility.

Looking back, Construction Superintendent Davies said: "We could never have done this job within the time limits had it not been for Steeltex."

So if a tight construction schedule faces you, or if you want to cut labor costs, Steeltex will suit your needs.

Contact your nearest Pittsburgh Steel Products sales office for direct or distributor service.

▶ **See Sweets Catalog Section 2g**

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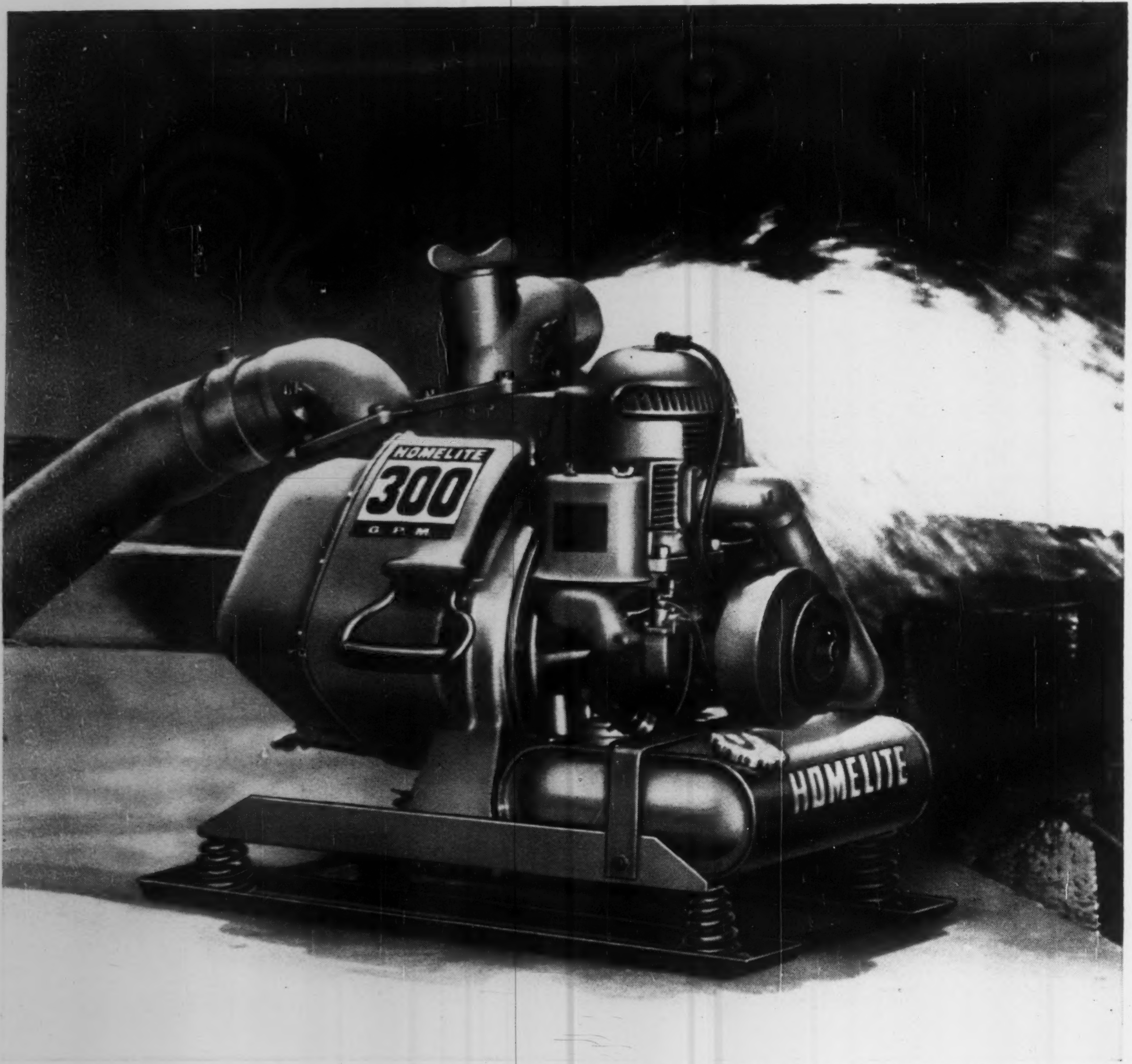

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The Pump That's Measured In Minutes

This pump is called the Homelite "300" Pump for a very good reason. In addition to fast self-priming, guaranteed 28 ft. suction lift, non-clogging design, and extra long life ceramic coated seal, this pump handles 300 gallons per minute . . . 18000 gallons per hour. It does the job in minutes. And, it gets to the job in minutes. It's compact, lightweight and can be carried easily to any pumping location.

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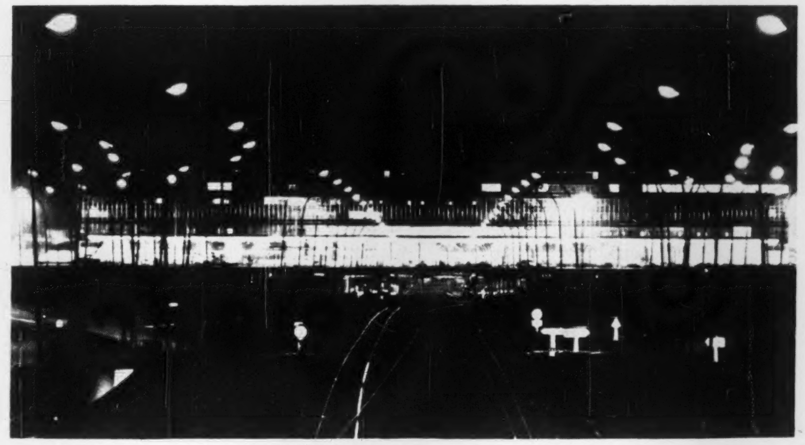


Bright and colorful by night or day . . .

Orly's Terminal Goes to Work

An airport terminal building the French call "a synthesis of modern techniques" went into service this week at Orly Field, just 5½ miles from the southern edge of Paris. The opening followed February inauguration ceremonies that brought General Charles de Gaulle and some 10,000 people to see the impressive new building, which will pass about 3 million air travelers this year.

The new terminal at Orly is a $24-million structure. The Paris Airport Authority says no building so vast has been built in France since Louis XIV erected Les Invalides. It is nine stories high, including basements, totaling over 1.4 million sq ft.

Orly's big building is not a terminal in the usual "American system." Most of the passengers in and out of Paris are international air travelers, requiring a building designed for efficient but controlled movement of people through passport and custom checks. The decentralization so common among the larger airports in the U. S. was deemed uneconomical by the Paris Airport Authority. For economy and convenience its architects and engineers put the entire complex under one roof.

And quite a complex it is.

The terminal houses passenger registration counters; baggage delivery halls; technical, commercial and administrative offices of the various airlines (27 now use it); air traffic control and weather bureau; immigration, customs and public health control; Paris Airport Authority offices; locker room, dispensary and lunchroom for the present 2,000-plus employees; commercial concessions including bars, restaurants, a 350-seat theater, a 56-room hotel, shops, news stands—even a five-and-ten-cent store, or its new-franc equivalent.

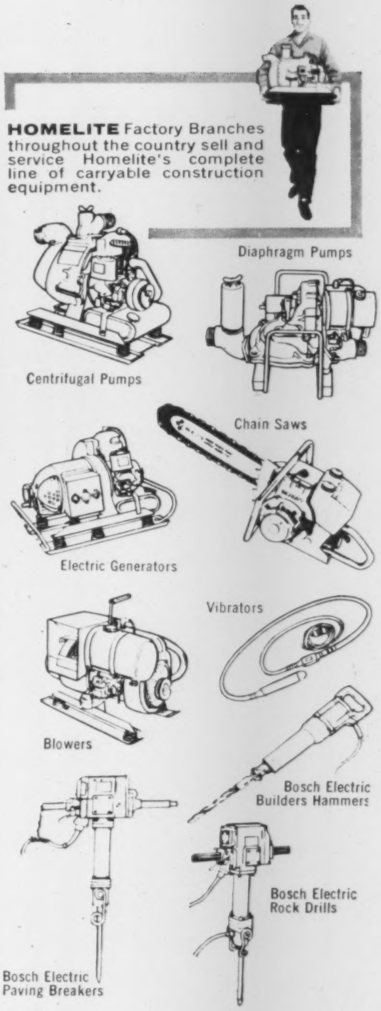
The massive new building stands in the middle of Orly Field's 3,660 acres Its major axis runs east-west, as does the field's present 10,800-ft main runway. Both building and runway bridge France's Route 7, major express highway out of Paris to the south.

Approaching the building from Paris one sees a solid vertical facade of glass, steel and aluminum, a main building 600 ft long and six stories high. A two-story west wing extends 820 ft to plane loading stations on the building's far side. Ultimately, a similar wing will extend out to the east and encompass the present Orly South Terminal, used exclusively until the new building opened this week by Air France.

Approaching the shining new building by highway from the south, one gets an entirely different view. Whereas the north facade is straight up and down, the building's south facade is terraced back to afford large and landscaped rooftops for both travelers and local sightseers. (Even while this terminal was under construction, Orly Field last year attracted more sightseers than anything in France but the Eiffel Tower.)

Impressive as Orly's new terminal looks from outside by day, it is by night that it truly shines, when its illumination brings forth the colors and tones, principally of its interior. Much use has been made in the interior of anodized aluminum of a color dubbed "Orly blonde". Exterior steel panels are enameled a "deep sea blue", but glass makes up 55% of the building's facades.

Most exterior and interior materials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were chosen for economy and ease of maintenance, as well as for appearance. There are white stone floors, columns faced with marble, ceilings of soundproofed blue aluminum, formica panels and sky-blue acoustical steel ceilings.

Sound control is a very big feature of the design. A 560-ft-long lounge overlooking the airport's main parking apron has a 23-ft-high wall of ¾-in. glass through which plane movements outside are seen but not easily heard. Sound of take-offs directly in front of the building and only some 1,200 ft away is noticeable, but not annoying. A "whisper system" of intercommunication puts out hushed messages on 2,000 speakers throughout the building.

Just as the noise of the jets and propeller-driven planes is kept out, there is protection against their gases and odors. The building's ventilation system keeps a slight inside air pressure to hold out the outside air. Inside air is purified with activated carbon and circulated through 21 miles of conduits. Only the hotel and major restaurant will be air cooled in summer.

Outside, there are blast fences to protect the building where the jet liners will taxi close to the loading stations along the building's wing.

The terminal has been under construction for four years. The underpass for Route 7 was started in 1957 (ENR June 23, 1960, p. 105). Steel framing, in places a composite design, began in 1958. And it has taken the last two years to enclose, equip and finish the interior.

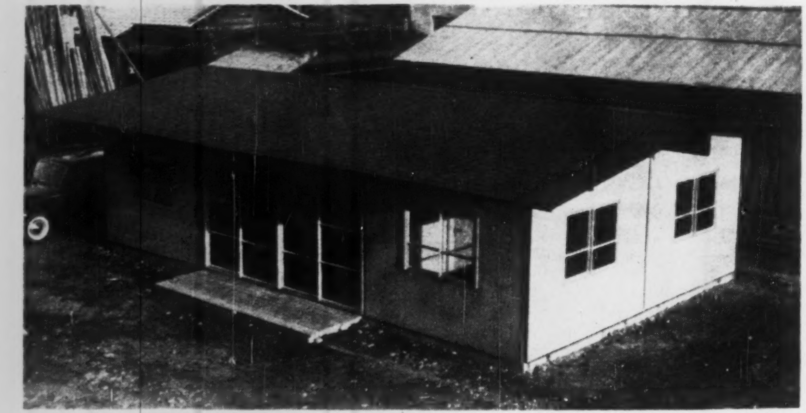
With the total Orly investment of the Paris Airport Authority now near $96 million, there remains much more to be done.

First, of course, the terminal's east wing will go up, to be finished in 1962. The over-all plan then calls for an 11,500-ft second main runway so that there will be one for landings, the other for take-offs. New hangars, warehouse and workshops will also be built.

The team of architects and engineers who produced this work for the Paris Airport Authority was led by J. Vasseur, director of equipment and installations. Henri Vicariot, engineer and architect, was responsible for the over-all plan and the coordination of architecture and decoration. Edouard Becker was in charge of technical planning. Jacques Block supervised construction.

Consulting engineers were Dugat, Roudier, Gonnard, Petitjean, Heiser Bailly and Maurel. Architects: Meyer, Contant, Gregoire, Legagneur and Milliez.

Pierre D. Cot is director of the airport.



Five men took two days building . . .

A Japanese House for Venezuela

Five men took two days to erect this house, which is one of 5,000 planned for low-income families in Venezuela.

It was developed by Mitsui Bussan Co., Tokyo, to specifications of the Caracas Construction Bureau.

Walled with sheet steel on honeycomb panels, the house includes three bedrooms, living room, bathroom and kitchen. The price in Venezuela: $2,000.

Mitsui Bussan officials say their present production is 400 houses per month.

Delivery of the units to Venezuela should begin this year.

(*International continues p. 73*)

HOW TO RUB or GRIND CONCRETE

Today, more and more builders specify a fine finish for concrete walls and ceilings. Because of this new requirement, and of the time and expense involved for hand finishing large areas, Stow Manufacturing Company has developed two easily portable flexible shaft grinders for finishing concrete. These grinders are electrically powered.

Two methods are used to smooth off hardened concrete: wet rubbing and dry grinding. Wet rubbing—required for smoothing green concrete to a plaster like finish. Use slow speed grinding wheel or disc. Apply water while grinding. Wet concrete can also be painted on with a brush, then smoothed into holes with a grinding wheel. Dry Grinding—use a high speed grinding wheel or abrasive disc to smooth dry concrete.

Either of Stow's portable electric grinders, the ½ HP model G40-C or the ¼ HP model JT-50, can be used for wet or dry grinding. Both models are available with open or totally enclosed motors, and are equipped with 8 or 12-ft. flexible shafts. Angle heads with different speed ratios can be selected. Write for STOW's pamphlet, Grinding Concrete, for complete information on proper speeds, grinding discs and wheels for both wet and dry concrete finishing. Stow Manufacturing Co., Binghamton, N. Y., also makes a complete line of concrete vibrators, rotary trowels, and screeds.

STOW MANUFACTURING CO. Dept. A-1
19 Shear St., Binghamton, N. Y.

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CATERPILLAR REPORTS

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Two Operators Try the New 630 and 631
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The "New" Wheel Loaders That Are Actually 7 Years Old!
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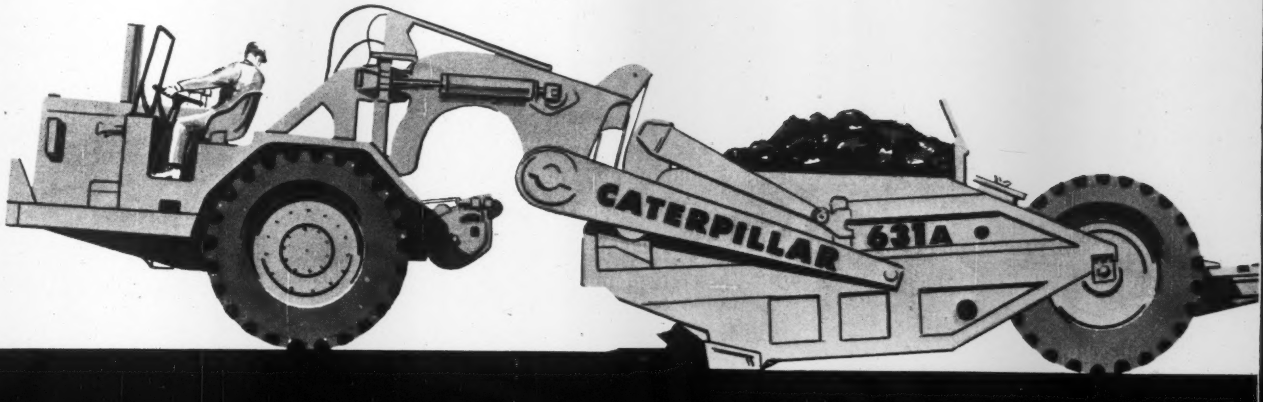
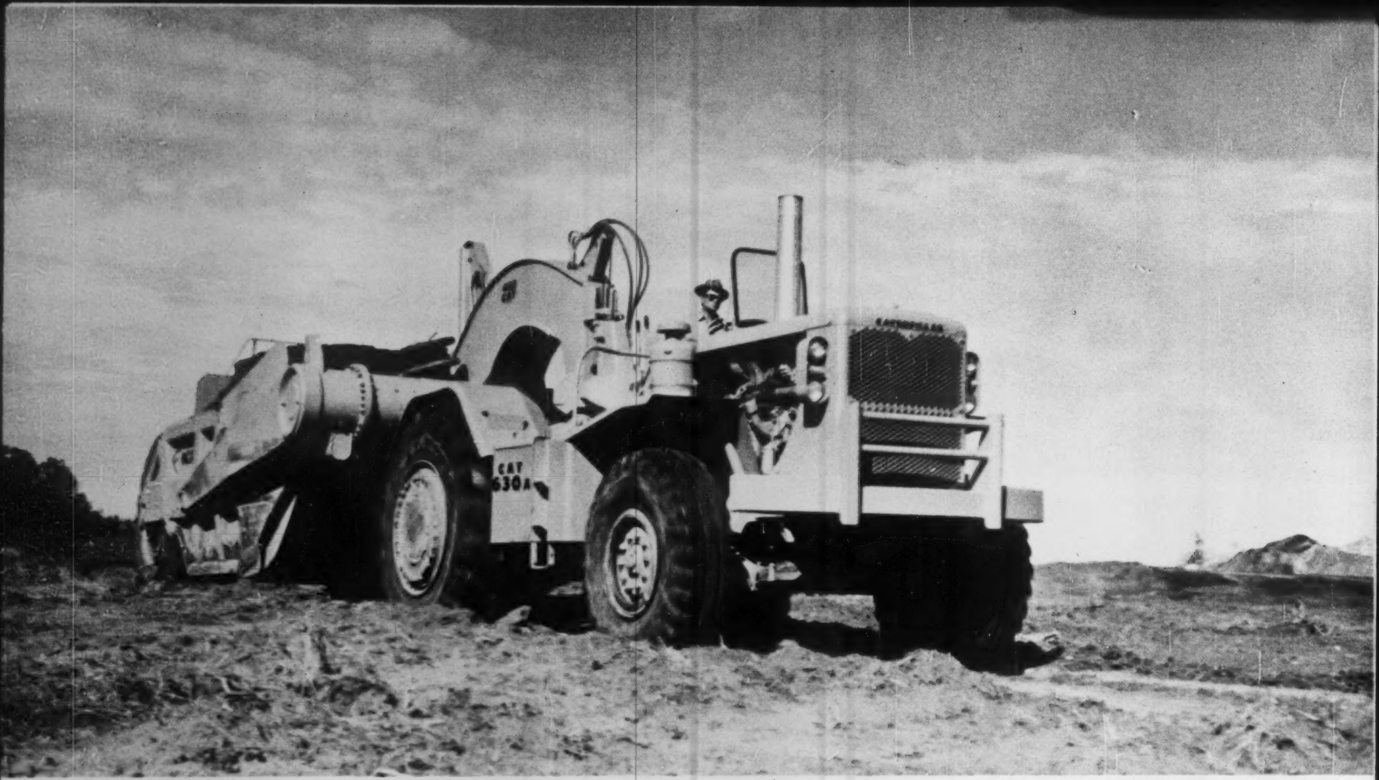
"We Almost Bought Another Make Machine . . ."





New four-wheel 630 . . . 420 HP (max. output) . . . 41.5 MPH . . . 28 cu. yd. heaped (21 cu. yd. struck)

Two operators try the

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A. V. "Buck" McCurley

Operator 18 years
Tells about the 631

"You asked me to give the 631 the works. I did.

"And let me say right off I found power shift great. I didn't have to work so hard to keep the tractor rolling at top speeds up grades, through soft spots and on the straightaway. And with those three automatically selected drives for each of the three speed ranges, it has better speed selection than any other rig I've seen.

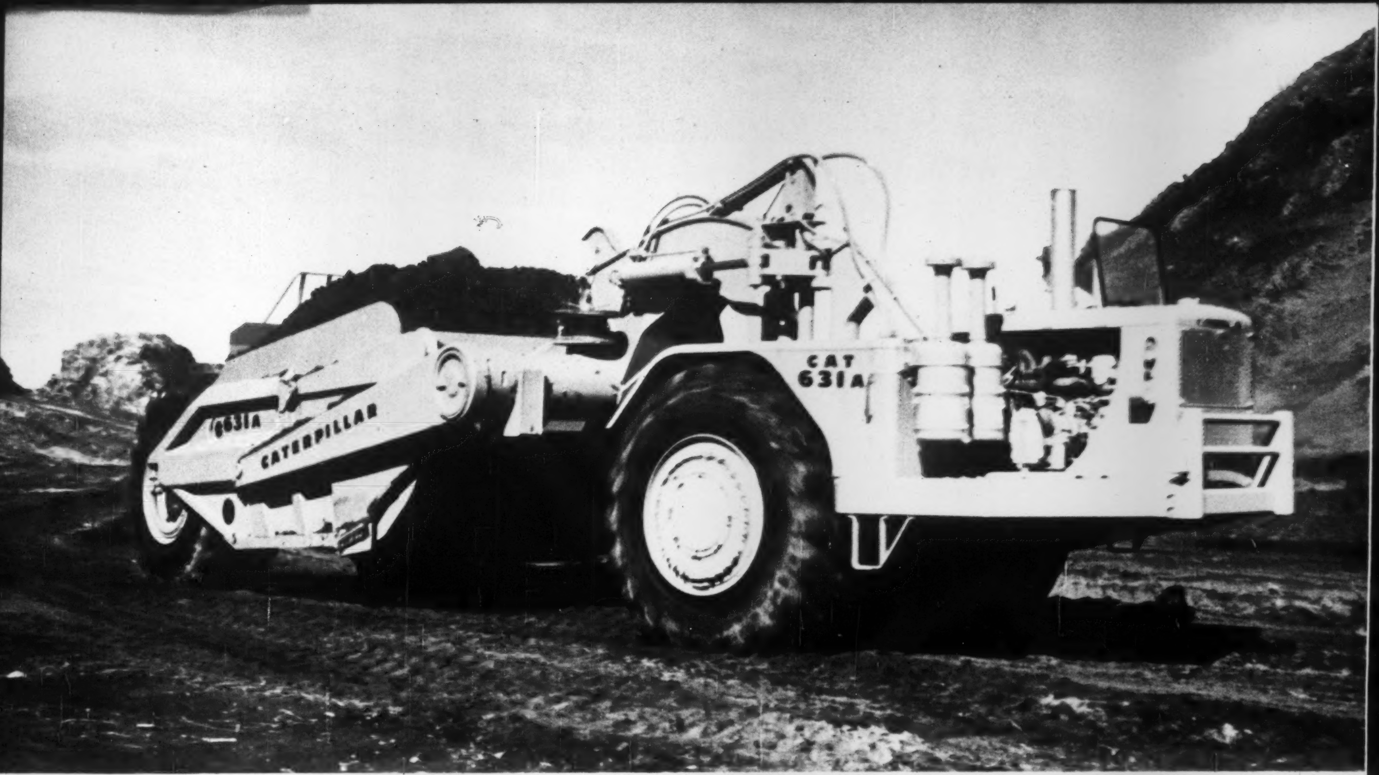
"When I start out in the cut in load range, the scraper stays right with the pusher—I don't pull away every time I raise the bowl to pump in a few more yards. When the scraper's packed full, I just slip the shift lever into 1st range, and feel the push of all those horses. Moving like this, it seems to take off in direct drive. On a dead start, it automatically shifts to direct drive in about 15 feet. It shifts easy, but I know when it happens. I feel the push in the seat when it accelerates. No jar—no thump—just an easy push.

"It's easy to tell when to move the shift lever. Just check the dial. It shows when to shift, up or down. And with the way the shiftbox is cut, it's easy to shift—just move the lever into the next corner and it's right where it belongs.

"I notice I travel faster than with a straight shift machine. When you run that kind of rig hour after hour, you don't shift every time you hit a grade or soft spot—that wears you out. But this power shift 631 takes care of that for you. For instance, say I'm running down the road and hit a soft spot. Or when I pull on the fill. The rig is going to slow down. This transmission automatically shifts down at the right time—and I'm under way at the best speed I can make.

"How does the 631 work on a grade? Well, with an oversize load I stopped it part way up a 7% slope, about 200 feet from the top. The roadbed was solid, with a little loose gravel on it. I put it in 1st range, and stepped down on the accelerator. No spin or bucking! The tires just took hold and up we went. It picked up the load right away, and in less than 20 feet it *automatically* shifted up to direct drive. By the time I reached the top it had automatically shifted to overdrive and was ready for me to shift into 2nd range as I topped the rise. That's the kind of power I like to feel in a tractor!

"I also tried this rig on a rough road at high speed, just to see what would happen to this automatic shifting when the machine started to bounce. On other power shift machines, I've felt that wild surging as the weight comes off the drivers and the transmission speeds up, then slows down as the weight comes back on. But not with this one. I went right over the bumps. With that solid drive it stayed right in gear without that



New two-wheel 631 . . . 420 HP (max. output) . . . 31.2 MPH . . . 28 cu. yd. heaped (21 cu. yd. struck)

new 630 and 631

new air-actuated cable control? Here's firsthand word from A. V. McCurley and L. H. Rife

surge. I kept safe control and *high speed.*

"To sum it up, I don't have to work as hard with this new machine, but I get more production at the end of the day. The 631 works in the highest gear possible for job conditions, to move the loads fast."

Leon H. Rife

Operator 20 years
Tells about the 630

"Power shift isn't the only big thing on these new machines. Take the new air-actuated cable control, for instance. (It's on the 631, too.) It's another muscle saver. Just a short pull—about three inches. I understand I'm just working an air valve, so there won't be any wear to loosen linkage. And it's so easy to pull. I'd say it's about 50% easier than the old one. That means a lot when you're picking up a load and dumping it every few minutes. This makes it sound like maybe I don't have real control of the cable. But there's some feel built into this unit so you can feel the strain on the cable.

"I noticed another thing. I don't seem to ride the clutch any more. I guess I used to because it took so much to pull the lever, and it traveled so far after it got worn, that I never really let go of the control lever when loading or dumping. But now this new Cat unit is either in or out. This should make it last a lot longer —cut down repairs.

"That new scraper is a humdinger, too. I don't know what's doing it. Maybe part of it is the new larger tires that raise the rear of the bowl a little more. But it loads better and faster. The dirt seems to boil up all the way across the bowl. And the front end fills up before the dirt starts spilling out. I've been getting full loads in clay—I mean every corner to the top—in a little over 20 seconds with just a single D9 pusher.

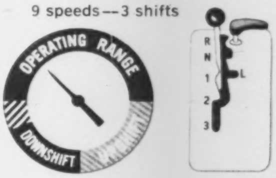
"There is one change in the scraper I really like. They raised those bowl lift sheaves about six inches. Now when I have to pump load, the material doesn't build up and get into the sheaves. It really cuts down on cable breakage.

"Mechanics tell me it should be easy to service these machines, too, because of the unit construction which allows them to work on all major components without disturbing others.

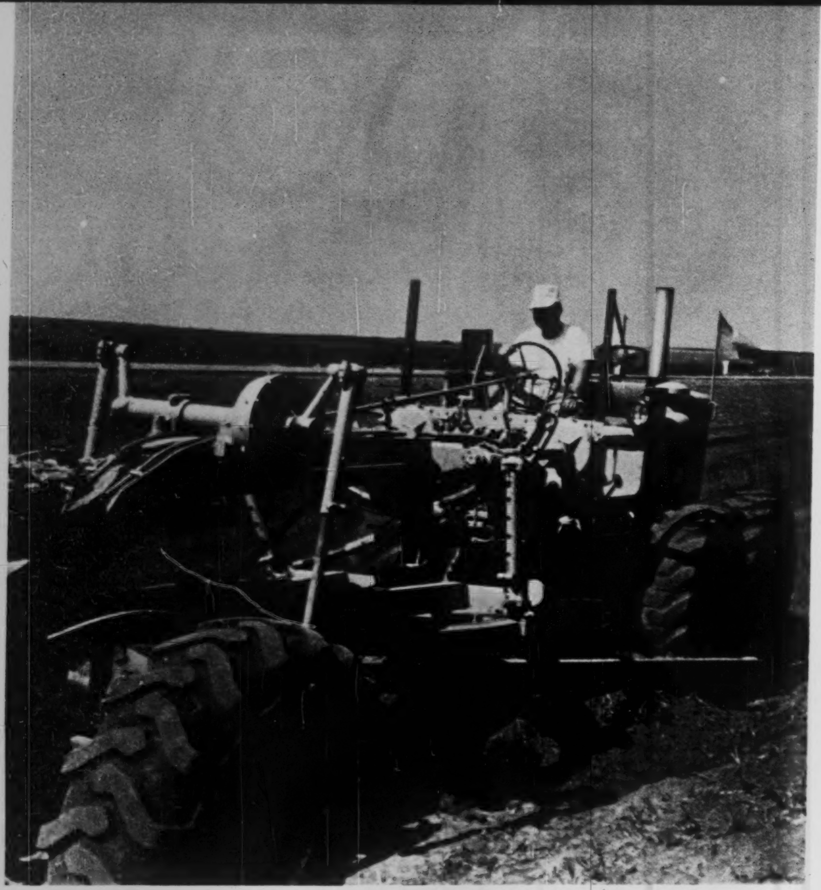
"There are a lot more features, too—you just have to work one of these rigs for a while to appreciate them."

POWER SHIFT TRANSMISSION

9 speeds--3 shifts



One lever gives operator instant selection of three speed ranges . . . dial indicator tells him when to shift. Within each range, transmission automatically shifts to torque divider drive, direct drive or overdrive to match conditions.



Flat Bottom Ditch Cut Twice As Fast by No. 14 Motor Grader

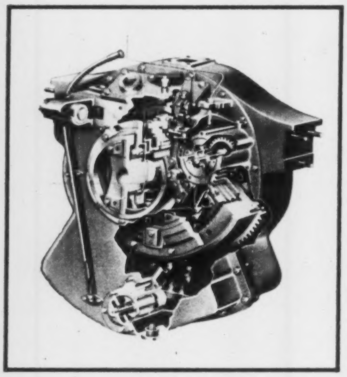
JOB DESCRIPTION:	No. 14 and No. 12 Motor Graders were each cutting flat bottom ditches along two miles of a highway resurfacing job.
LOCATION:	Highway 116, between Metamora and Roanoke, Ill.
OWNER:	R. A. Cullinan & Son, Tremont, Ill.
PURPOSE OF STUDY:	Compare production of No. 14 and No. 12.
RESULT:	Both machines worked along their respective two-mile stretches of highway for the same length of time. The No. 14 completed its job except for one final pass. But the No. 12 was less than half finished. It is conservative to say the No. 14 did the same work twice as fast as the No. 12!

Comments owner R. A. Cullinan, "The production difference on this job was unusually good—but my new No. 14 always outworks the productive No. 12 by at least 50% with only a slight increase in cost."

Many features contribute to this production advantage in the big No. 14: turbocharged 150 HP Cat Diesel Engine; power-assisted brakes and steering; new mechanical controls for fast blade response, precise adjustment; curved side shift rack for widest range of blade positions without adjusting linkage; and the exclusive Caterpillar oil clutch. When you need more production than the dependable 115 HP No. 12 can give, let the powerful No. 14 take over.

THE INSIDE STORY

Why the Cat Oil Clutch Is Such a Money-Saver



If you've owned old-style equipment, you're familiar with the problems of dry-type clutches—frequent adjustments and replacement, and "fade" in hard work. Hard work creates heat, and heat is the biggest enemy of clutches. While other companies have tried to make their clutches live with it, Caterpillar engineers solved the problem by removing the heat.

Parts in the famous Cat oil clutch run constantly in oil pumped from the crankcase. Thus clutch temperatures can never rise above engine temperatures to cause fade and glazing. As the clutch discs move to the engaged position, facings are oil-protected to prevent wear. As they become engaged, pressure between the plates forces all oil from the friction surfaces to eliminate slippage.

Millions of hours of hard work have proved the facings of the oil clutch undergo very little wear. In 1000 hours' operation you can expect wear of only about .0025 inch —less than the thickness of a human hair. In fact, wear is so slight the clutch operates up to 2000 hours without *adjustment*—and almost never needs replacement.

The oil clutch is standard equipment on all Cat Motor Graders and direct drive D9, D8, D7 and D6 Tractors. It is optional on the D4.

Roy Rash (right) discusses job progress with foreman B. F. Roberts

How a business started with 4 used rigs

From a road job that paid $1.50 a day in 1930 to head of his own $2,000,000 construction company today—that's a capsule version of Roy C. Rash's rise to success. When he was asked how he accomplished it, this husky six-footer said: "It just happened. There's no secret formula. I'm just lucky to have good men and good machines."

A closer look at his background shows that a lot more than luck helped him get ahead. There's a solid backlog of good "old-fashioned" American virtues—hard work, long hours, thrift, drive and initiative, plus rung-by-rung experience in dirt moving that started at the bottom 30 years ago with the Hood County (Texas) Road District. He was 16 then, and his first operating job was on a Caterpillar Thirty Tractor that pulled a grader.

Other early operating experiences include stints on an RD8 and a No. 12 Motor Grader for the Chadwick & Williams Contracting Company. Later, he became a foreman and soon was a superintendent.

In 1943, Roy went into business for himself, starting the Border Construction Company. Up to then, his preference for Caterpillar was largely sentimental. But when it came time to buy his own machine, he knew sentiment couldn't influence his decision. He had to have machines that would make money or he would go broke. And since the capital he'd been able to save was limited, he had to get the best deal he possibly could.

Guided by this reasoning and his experience with earthmoving machines, he still chose Caterpillar, making a down payment for three used D4s and a used D7.

With these used machines, Roy first concentrated on building farm ponds and oil field roads. Then he branched out to larger jobs. Currently he is working on State Highway 359. As in his early days, he relies on Caterpillar to help him make money. His Caterpillar spread consists of two DW20s, two DW15s, five No. 12 Motor Graders, three D8s, two D7s and one D6.

He still works as hard as ever, too. His 12-hour days see him discussing job progress with his superintendents and machine health with his mechanics. He also finds time to keep on top of new developments in the construction business. He can quote weight, horsepower and capacity of most major manufacturers' earthmoving machinery. He is familiar with their strong points and shortcomings. And like all contractors he is eager to talk about what should be built next.

In starting with used Caterpillar equipment, Roy did just what many other ambitious one-time operators have done and are doing now as a result of their experience and the reputation of the Caterpillar Dealer for honestly described, rock-bottom-priced machines. In fact, to take the guess and gamble out of buying used equipment, the Caterpillar Dealer offers three types of *protected* buys—"Bonded Buy," "Certified Buy" and "Buy and Try." Financing can be tailored to fit an individual's needs.

Caterpillar's wheel loader line

brand new... and seven years old!

When did Caterpillar build its first wheel loader? If you say "last year," you're just seven years off—because the first model of the 944 was actually constructed 'way back in 1953. It looked somewhat different from today's production machines, but the basic design had been created and the first Cat wheel loader was moving material.

"Compared with machines on the market at that time," says one of the engineers, "that first machine probably was every bit their equal, but we felt it did not meet all the requirements we had established for this type of vehicle."

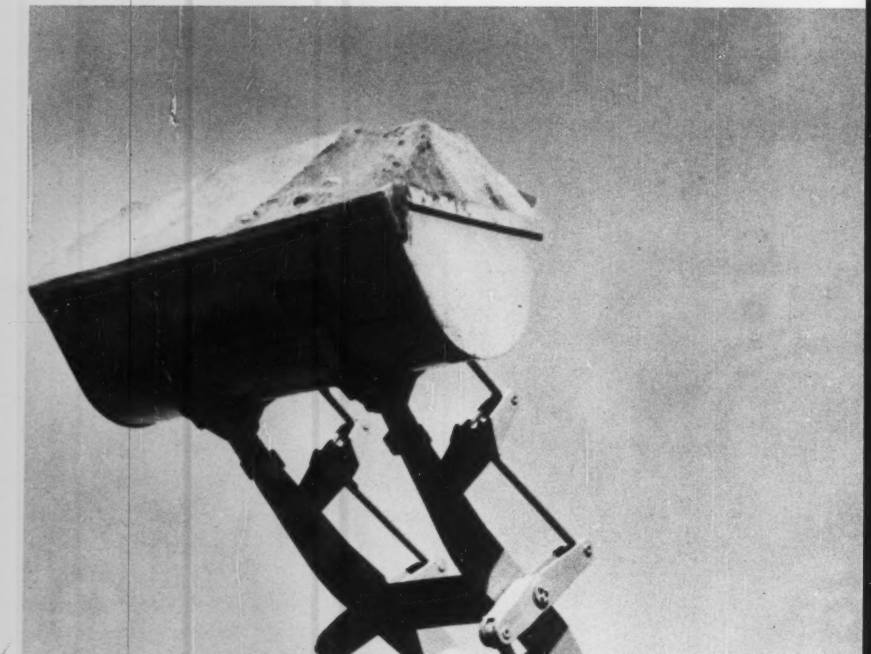
The following three years was a period of component refinement. Then, early in 1956, the new lightweight, turbocharged diesel engine was installed in the pilot model; a few months later the perfected version of the new Cat power shift transmission was added; and later the new "live action" hydraulic system was put in.

Now the 944 was judged ready for the most extensive testing program in the industry.

For some three years, the wheel loader was put through every possible torture test at Caterpillar's extensive Peoria proving grounds. Meanwhile, in the laboratory, component parts were worked thousands of times per hour to test fatigue resistance. And at the company's southwestern proving grounds, endurance was tested in all kinds of material, from dust to rock.

In March, 1959, the first Caterpillar wheel loaders went out on private jobs—with Cat engineers on hand to keep a critical eye on operating characteristics and judge customer reaction to the units. Several minor changes in hydraulic controls and visibility resulted from this final testing period.

Result? Three wheel loaders with advanced new design and seven years of experience behind them—the 1¼ yd. 922 (80 HP), the 2 yd. 944 (105 HP) and the 2¾ yd. 966 (140 HP). Already hundreds of owners are finding these safe, dependable Traxcavators to be top producers on all their materials handling and excavating jobs.

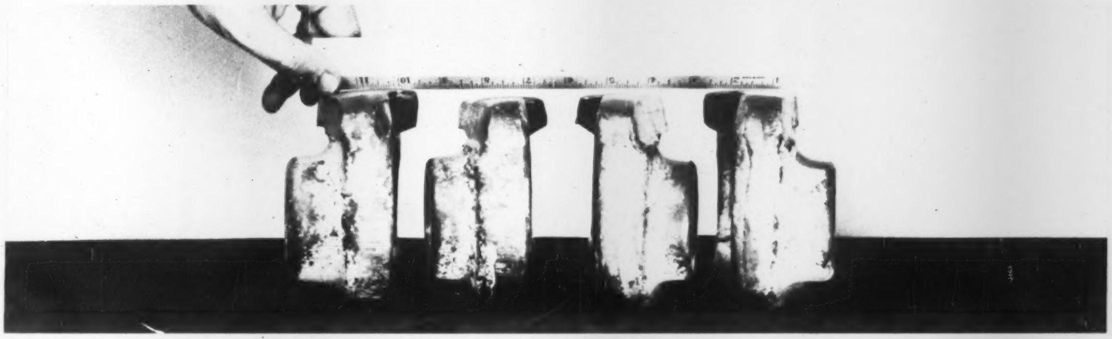


HIGH PRODUCTION FEATURES ON ALL CAT WHEEL LOADERS—POWER SHIFT TRANSMISSION for smooth, instant shifting... OPERATOR SAFETY with lift arms and cylinders all forward of the instrument panel... BUCKET CONTROLS on the right side leaving left hand free for machine operation... AUTOMATIC BUCKET POSITIONER... DUAL BRAKES, the left neutralizes transmission to transfer extra power to bucket... LIVE ACTION HYDRAULIC SYSTEM for tough material excavation, fast lift and dump... EASY SERVICE ACCESS, seat tips forward for easy access to transmission oil filter and control linkage adjustments.

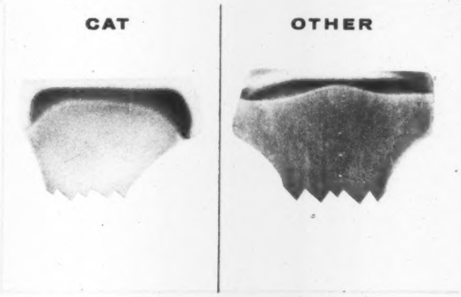
Special Report to Users of Caterpillar Equipment:

WHAT YOU DON'T SEE CAN HURT YOU

You can buy a lot of parts that *look* like genuine Caterpillar parts. Some may be cheaper initially. But they are as different as night and day when you get them in service.



Take these links, for example. They all *looked* identical when new. But see what has happened after 2000 hours on the same D8 Tractor! The two links in the center, a popular brand with induction-hardened rails, cost about 9% less than Caterpillar links originally, but showed about *50%* more wear.



The extra service you can expect from the Cat links can be seen and compared with other brands. Here are actual photos of etched cross sections of *production* links made by Caterpillar and the other manufacturer. The light areas at top show case depth and pattern of wear-resistant rail material resulting from heat treatment. See the deep, uniform wear case on top *and sides* of the Cat part? It's as hard as a good ball-peen hammer head. But in the other brand, the wear case varies both in depth and hardness . . . that's the reason why after 2000 hours the Cat-made links had worn 50% less.

Investigate and you will find superiorities for every undercarriage component built by Caterpillar. This extra quality—though it sometimes costs a little more initially—pays off by delivering many *extra* trouble-free working hours. That's why genuine Caterpillar parts cost you less per hour than other brands.

And when it's time to replace or rebuild your tractor undercarriage, see your Caterpillar Dealer. He is an undercarriage specialist with modern facilities to back him up. Get the full story on his many money-saving options and recommendations *tailored to your job conditions.* Truly CUSTOM TRACK SERVICE, designed to save you money . . . and offered only by your Caterpillar Dealer.

George and Donald De Bord, co-owners,
De Bord Bros., San Antonio, Texas

"We almost bought another make machine –then we watched a new Traxcavator with power shift transmission at work..."

When the De Bord brothers decided they needed a new front-end loader for their gravel pit operation, they looked the field over—and came close to buying another make of machine on a price basis. Then they watched it at work alongside a new Cat-built Traxcavator.

"The other machine seemed to be down most of the time," says George De Bord, "while the Traxcavator kept right on producing—and about twice as fast. That sold us, and we couldn't have made a wiser choice.

"Our new 955 loads out bank run gravel into 5-yd. trucks. Loading time per truck is about 75 seconds, with each load taking two full buckets and part of a third. The new power shift transmission makes it faster and easier on the operator. If we had them, we could load out 40 trucks an hour."

Many design improvements have gone into the new Series H machines to make them the big producers they are. Power shift transmission, for example, means that one lever gives split-second changes in speed and direction. New "live action" hydraulics provide faster lifting speed and greater lifting capacity. And the new 100 HP 955H has a big $1\frac{3}{4}$ cu. yd. bucket. Travel speeds forward range from 2.1 MPH in low first to 4.9 MPH in high second. Reverse speeds are 25% faster. Make sure you see it or the larger $2\frac{1}{2}$ yd. 977H in action before you make *your* choice.

George De Bord operating the 955

For the best in new and used machines, and the best in parts and service—see your Caterpillar Dealer

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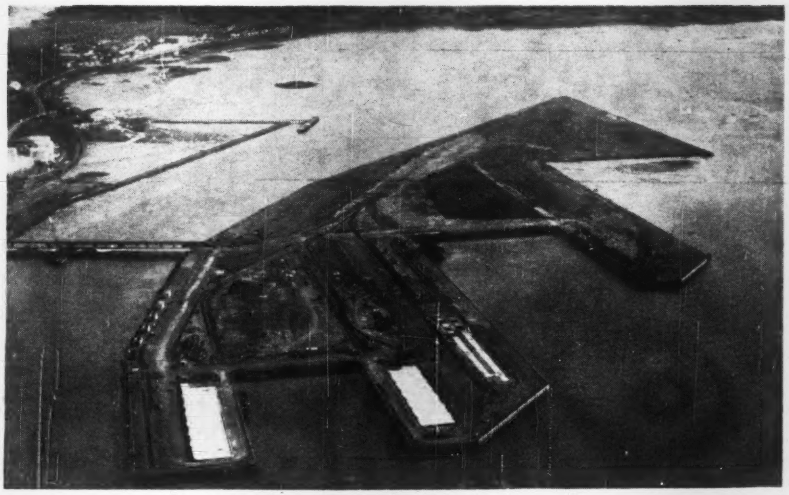
DIESEL ENGINES • TRACTORS • MOTOR GRADERS • EARTHMOVING EQUIPMENT



New Zealand's Island Harbor

An 84-acre island harbor costing more than $10 million is nearing completion at Bluff, at the southern tip of New Zealand's South Island.

Built by the French contracting firm Societe Nationale De Travaux Publics for the Southland Harbour Board, the harbor provides two coastal berths (foreground) and three overseas berths. The island was built up by dredging on a natural sandbank. It is linked to the mainland by a concrete bridge, which will carry both road and rail traffic.

The contractor quarried and hauled about 250,000 tons of rock for the rubble walls that surround the island. Material dredged to build up the island and provide a turning basin for ships totalled about 2,625,000 cu. yd. About 10,000 tons of steel sheet piling was driven to form the quay walls and about 25,000 cu yd of concrete was poured for the quays themselves.

Foundations for the cargo sheds (foreground) are now being laid. The new berthage is expected to come into use in December.

Paris Bridge Stirs Controversy

The fate of France's first cast-iron bridge, the 157-year-old Pont des Arts in Paris, will be decided by the outcome of a battle between traditionalists who want to rebuild it and traffic engineers who want to tear it down.

The footbridge was damaged early this month when a barge mast rammed one of its eight arches. The 190-ft bridge was declared unsafe and barred to the public.

The Pont des Arts crosses the Seine River just downstream from the Ile de la Cite, on which the Cathedral of Notre Dame stands.

Traffic engineers have long wanted to get rid of it and build a highway bridge in its place.

But many people in Paris and even a few official agencies are dedicated to a status quo for the city and press for reconstruction of the bridge.

But any action demands a solution satisfactory to several organizations involved: the city administration, the city police department, the Prefect of the Department of the Seine (a regional government), the Ministry of Public Works and the Department of Fine Arts of the Ministry of Cultural Affairs.

Concrete Slabs Replace Cross Ties on Soviet RR

Soviet Railroad engineers are experimenting with a rail line with no cross ties and no ballast. A test section is reported to have been in successful operation for more than two years.

Instead of normal cross ties, engineers installed precast reinforced concrete plates about 5.25 ft long, 6.56 ft wide and 9.36 in. thick. Each plate has a design load capacity of 22 tons.

The road bed is virtually paved with the precast slabs, since about 617 slabs are placed per kilometer (3,239 ft). A small gap is left between slabs to facilitate replacement. Rubberized pads are used between the rails and plates.

Maintenance costs are reported to be 5% of normal with wooden cross-ties.

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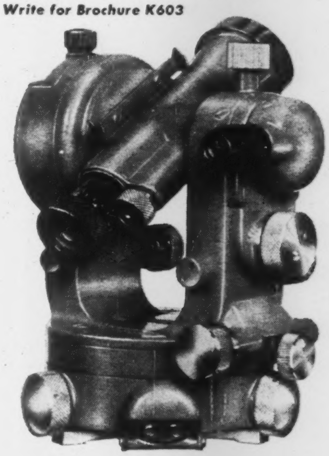
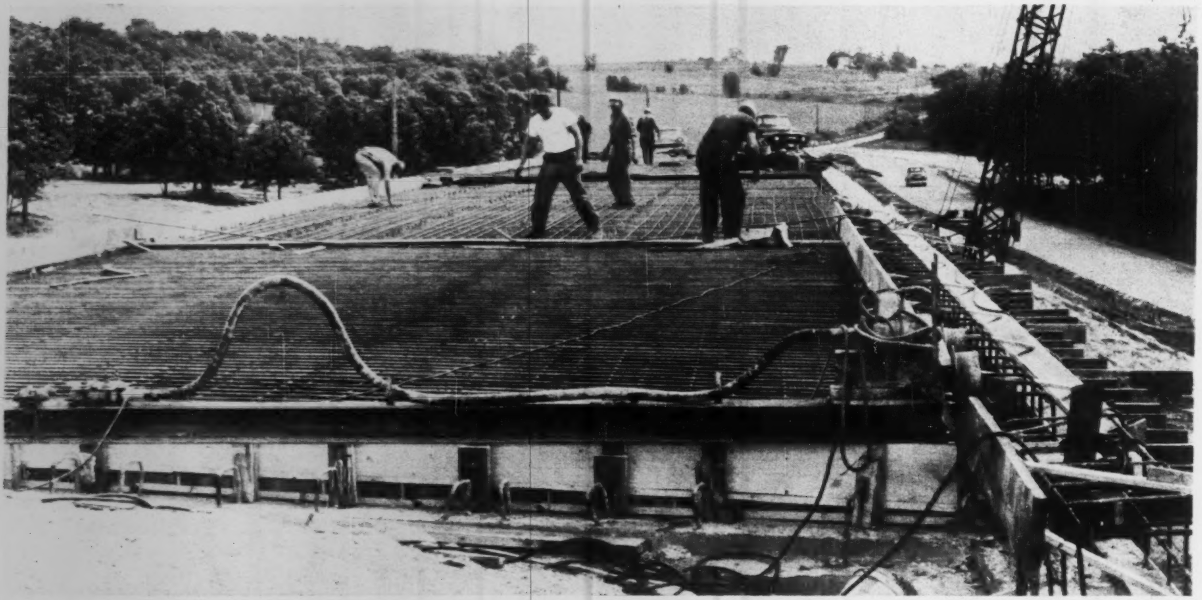
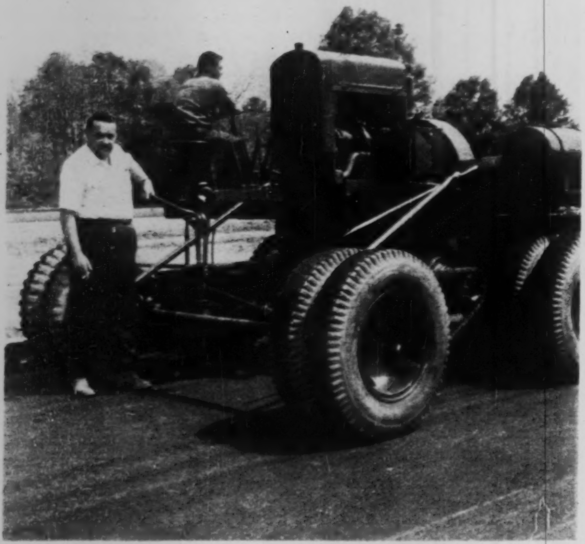
Write for Brochure K603



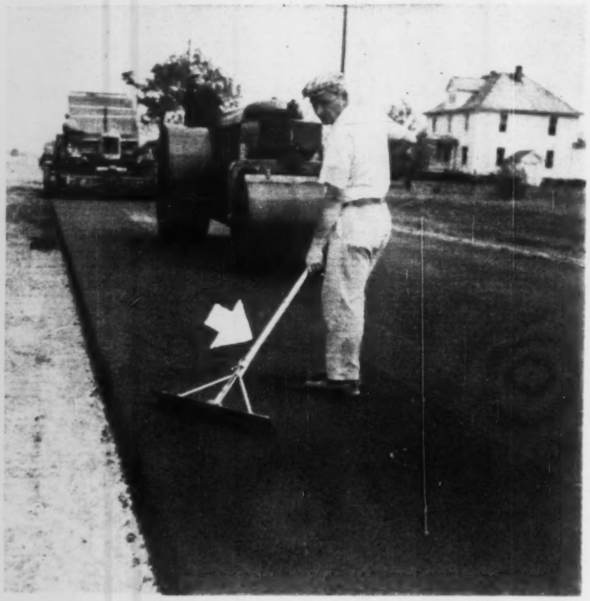
Here Are Seven Construction



1. HOME-MADE VIBRATING SCREED—Contractor on this Wisconsin Interstate Highway bridge made his own vibrating screed with a steel beam and an internal electric vibrator. First he made a perpendicular cut most of the way through the beam at the centerline of the roadway. He then bent the beam to form a crown for the roadway, and, using angle irons welded to the beam's top flange, bolted it rigid again. He then bolted an internal electric vibrator to the top flange with the vibrating head near the center of the beam and the motor at one end. Flanged wheels added to each end of the screed run on the inside curb forms.

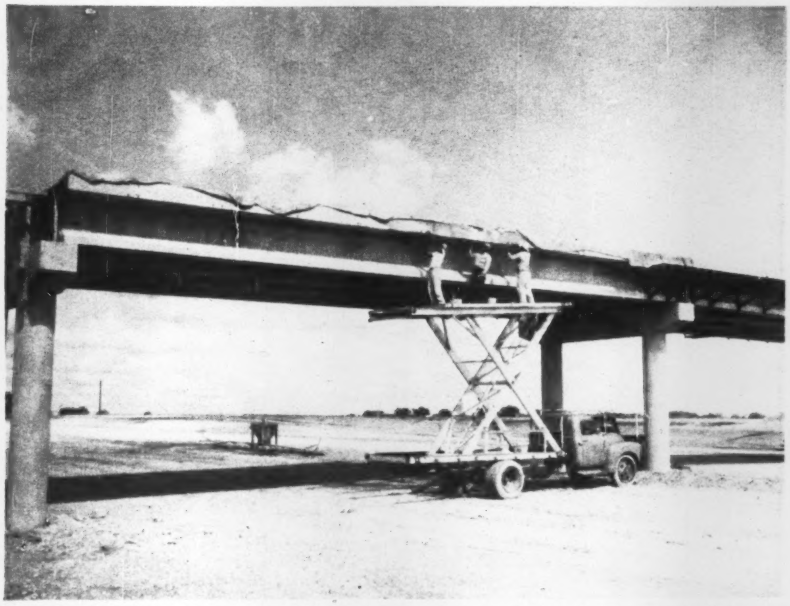


4. SHORTER TURNING RADIUS—Ohio contractor gets sharper turns and more maneuverability from his three-axle bituminous pavement widener with this simple little device that he rigged up himself. It's a hand ratchet attached to the machine's upper frame. It lifts the fixed rear axle so that the machine turns on two axles.

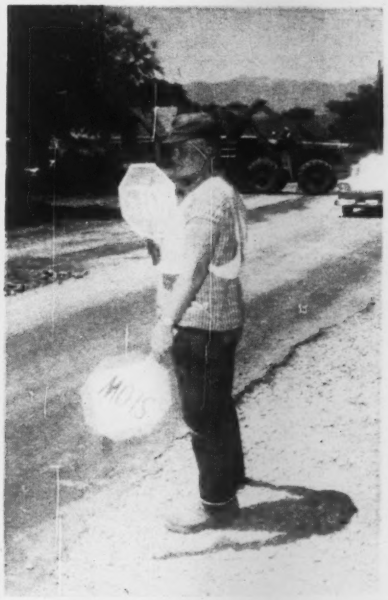


5. HOT LUTE—Non-clogging lute developed by Ohio bituminous paving foreman holds enough propane gas in its hollow aluminum handle to burn four hours. Hollow prongs on the lute function as jets for the burning fuel and the heat prevents asphalt from sticking to the blade.

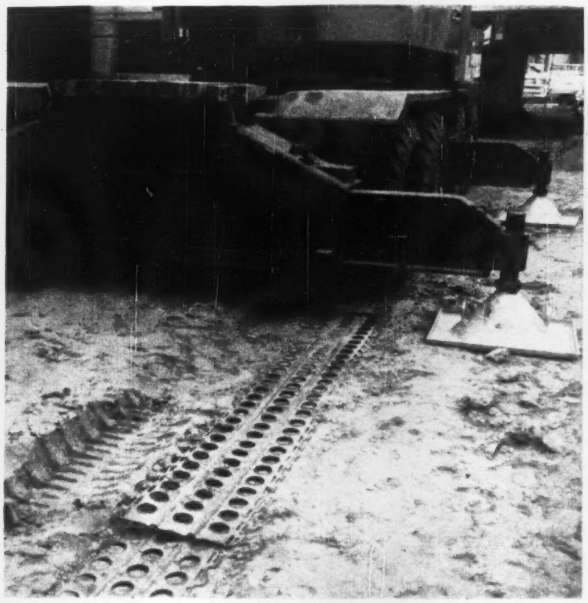
Tricks That Can Save You Money



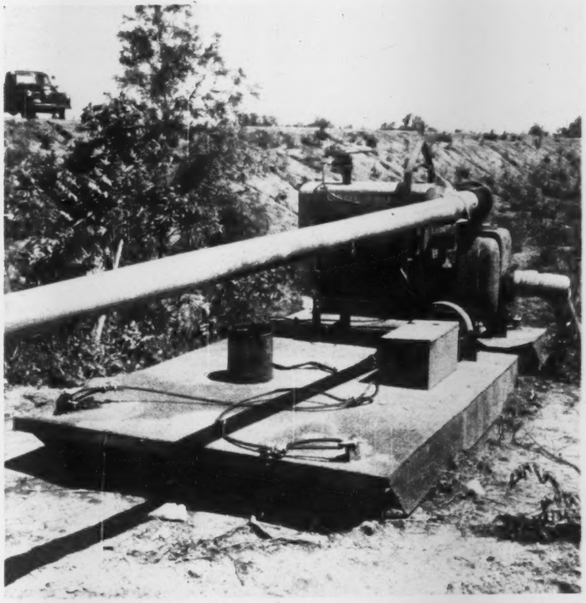
2. MOBILE FOLDING SUPPORT—This collapsible scaffold makes it easy to finish concrete under a bridge. Made of channel iron, it is mounted in the body of an old truck. A winch line from the truck connects to the back of the support and pulls up the legs to adjust the height of the platform. Pins inserted in the back legs hold the platform steady and in place.



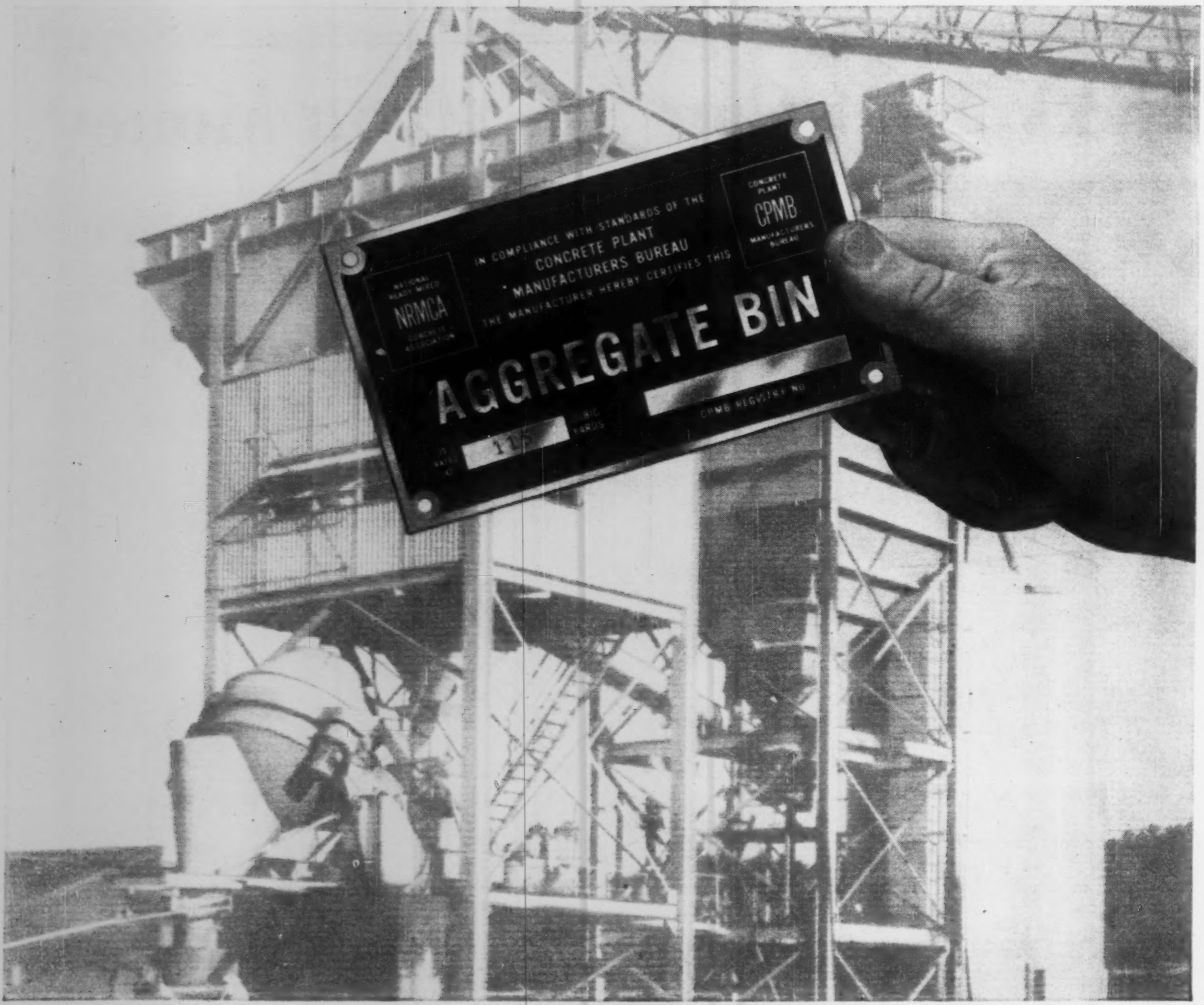
3. HAND STOP SIGNS—Flagmen on Utah road jobs are more effective with the state's hand-held stop signs. Only one sign is actually needed since they say "stop" on one side and "slow" on the other.



6. PORTABLE CRANE RUNWAY—A California crane rental company uses strips of war surplus landing strip metal for holding up truck cranes as they move about the job. The material, cut from slabs that were used to make temporary landing strips, saves bringing in a crane with crawlers.



7. AMPHIBIOUS PUMP—This unit can be spotted on land or water. On a fabricated pontoon, 10 x 20 ft by 1½ ft deep, the pump can be floated into areas inaccessible by land. The ends of the pontoon are turned up to make it easy to skid over rough ground or to suck up into the back of a winch truck.


NATIONAL READY MIXED NRMCA CONCRETE ASSOCIATION
IN COMPLIANCE WITH STANDARDS OF THE
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MANUFACTURERS BUREAU
THE MANUFACTURER HEREBY CERTIFIES THIS
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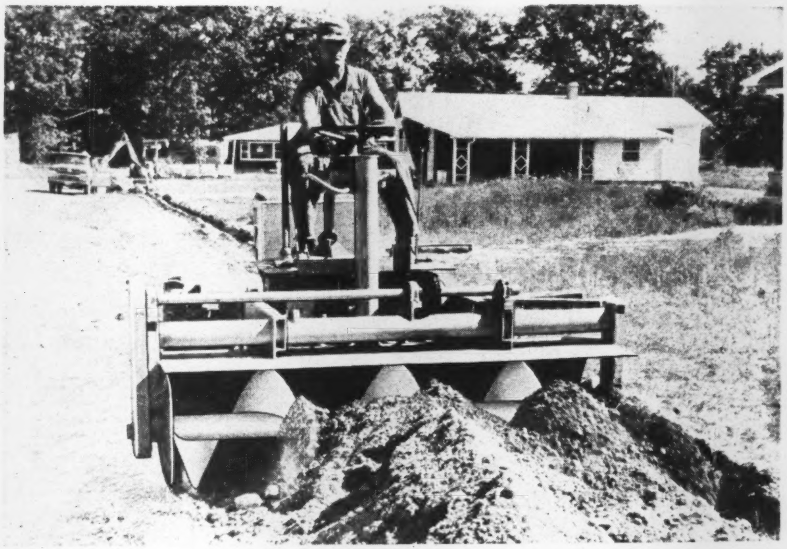
Oakland, Calif.



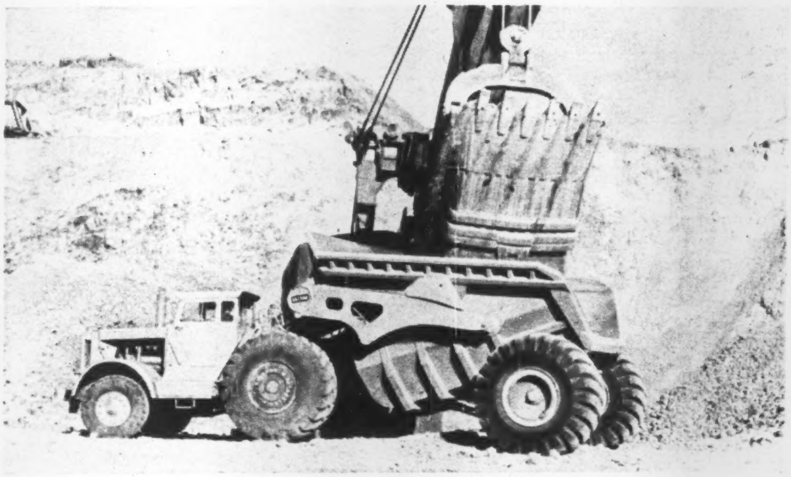
Unit Fills Ditch in One Pass

A backfiller called the Pow-R-Ditch Filler is designed to push dirt back in a ditch in one pass to save time and labor the maker says.

A rear-mounted 36-hp Wisconsin engine powers the machine.

The auger is two ft in dia and 7½ ft long. Mounted horizontally in the front of the unit, it pushes dirt back into the ditch leaving the adjacent area clear.

The maker says the Pow-R-Ditch Filler is highly maneuverable. Power steering is a standard feature. The unit has 4-wheel drive. Operator sits above the auger and has a clear view ahead and behind the unit. VERMEER MANUFACTURING CO., PELLA, IOWA.



Rear Dump on Special Order Only

A 55-ton variable wheel base rear dump trailer recently added to the Easton line of off-the-road trucks can be hauled by any suitable two axial tractor.

Designated the TS-3755, the machine has a capacity of 37 cu yd and is made only on special order. It has a dumping angle of 55 deg. With its body raised, its shortened length increases maneuverability. The TS-3755 will be available with either single or dual rear wheels. EASTON CAR AND CONSTRUCTION CO., EASTON, PENNA.

Proved Cost Saver

CURE and SEAL

CONCRETE

WITH 1

PRODUCT

THOMPSON'S
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WATER SEAL
MANUFACTURERS
E.A. THOMPSON CO. INC.

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and
Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

4932

Thompson's

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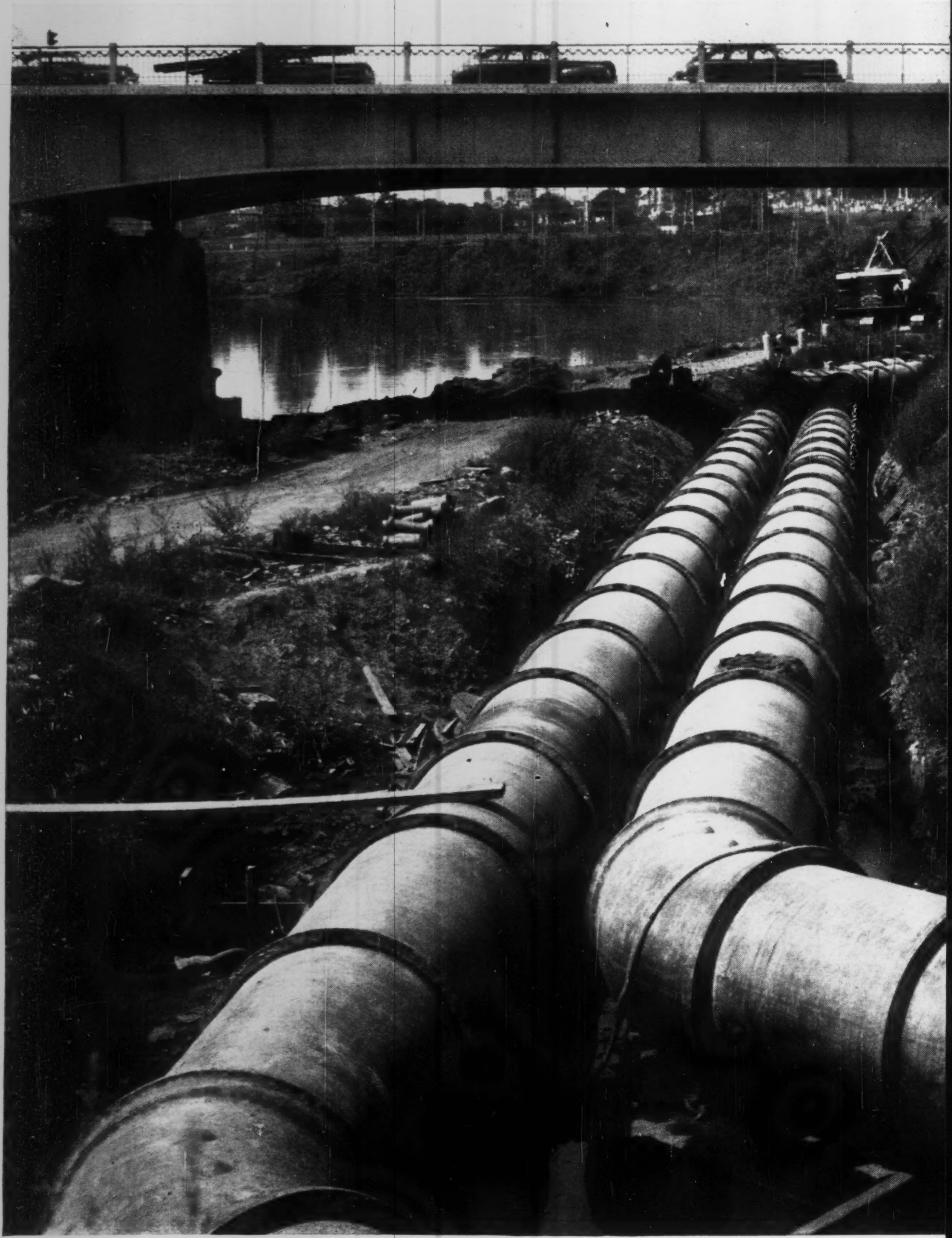

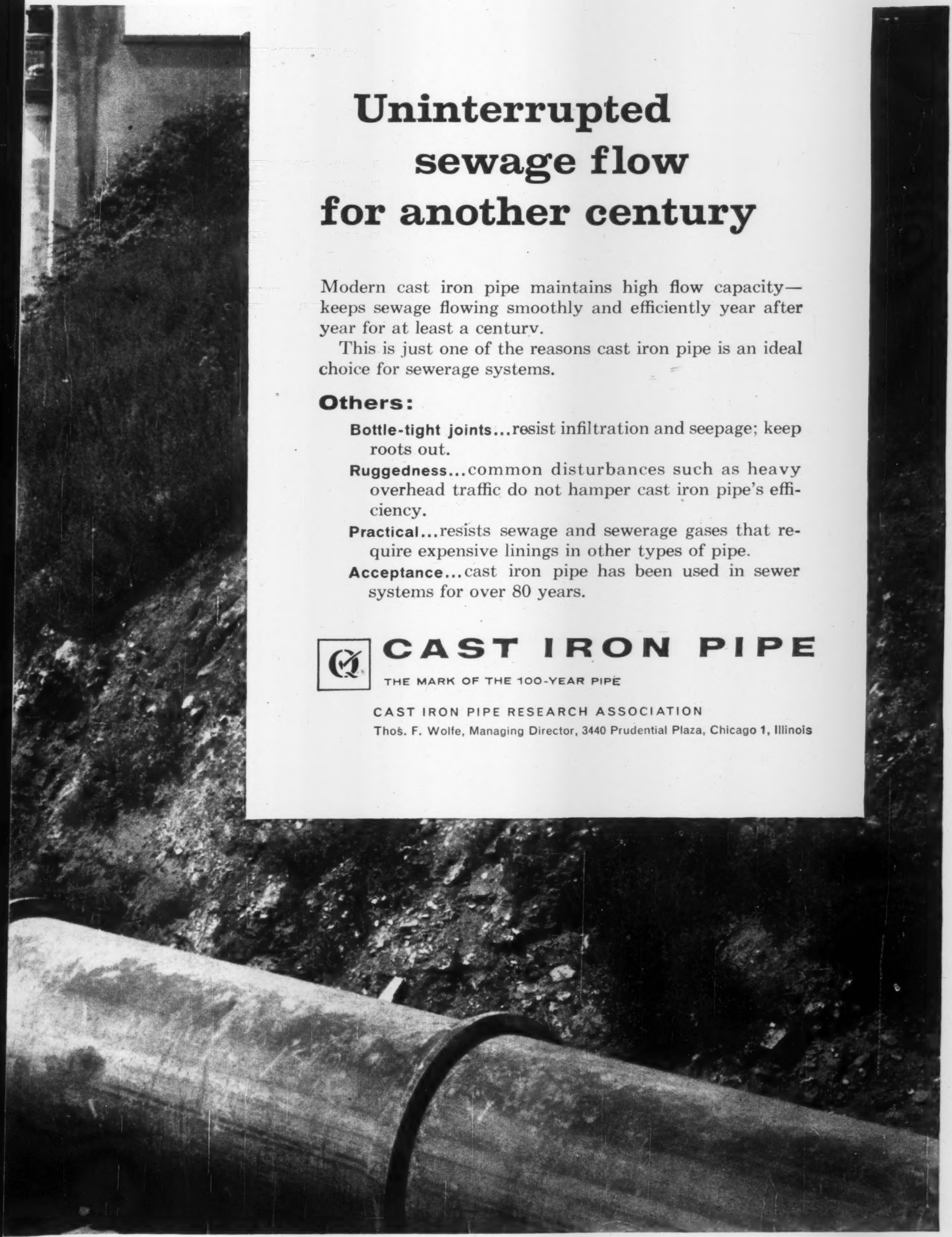

Uninterrupted sewage flow for another century

Modern cast iron pipe maintains high flow capacity—keeps sewage flowing smoothly and efficiently year after year for at least a century.

This is just one of the reasons cast iron pipe is an ideal choice for sewerage systems.

Others:

- **Bottle-tight joints...** resist infiltration and seepage; keep roots out.
- **Ruggedness...** common disturbances such as heavy overhead traffic do not hamper cast iron pipe's efficiency.
- **Practical...** resists sewage and sewerage gases that require expensive linings in other types of pipe.
- **Acceptance...** cast iron pipe has been used in sewer systems for over 80 years.

CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

CAST IRON PIPE RESEARCH ASSOCIATION

Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

Jaeger pumps know how to handle water

Two independent, simultaneous priming actions . . . fast and doubly sure. • Oversize shells and impellers, engines of largest horsepower applicable. • The only positively lubricated shaft seal with ready inspection port. • Prime without racing, pump at slower speeds, pump more thousands of hours. Performance guaranteed. Sizes 1½" to 10". See your Jaeger dealer or send for Catalog

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THE NEW
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An Ideal Drill For:
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Here's the most useful tool you can buy! It saves time, labor and money for the busy contractor.

The Acker Ambassador cores neat, clean holes in tile, concrete, reinforced masonry. And it does the job faster, quieter and cheaper than a hammer and chisel!

The Ambassador gives you 360° operation. It features a heavy duty high torque 2 speed reversible electric motor, rack and pinion feed, alloy gear unit, sturdy steel construction and rugged base. It's built to do a big job!

Ask for a demonstration or write for your free copy of Acker Bulletin 27 ENR today!

ACKER DRILL CO., INC.
P.O. BOX 830 • SCRANTON 2, PA.

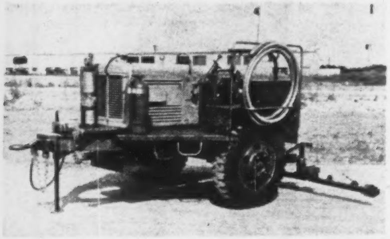
Hydraulic Tournatractor Utilizes 5,000-psi System

The Model C Tournatractor with hydraulically operated attachments is a companion unit to the C Tournatractor with electrical controls.

The machine utilizes a high-pressure hydraulic system of 5,000 psi and a direct drive, Dynex piston pump. Another feature is the use of two slide valves in the control system.

The new Tournatractor is powered by a GM 6V-71 engine, producing 218 hp. The power-shift type transmission is air actuated with torque converter, four speeds forward and a top speed of 18.5 mph. Length of the tractor is 13½ ft without the blade. The width is 10½ ft.

Also included is the integral, 1,400-rpm power take off, for use with the double-drum power-control unit in operation of towed equipment. LeTourneau-Westinghouse Co., 2301 NE Adams St., Peoria, Ill.

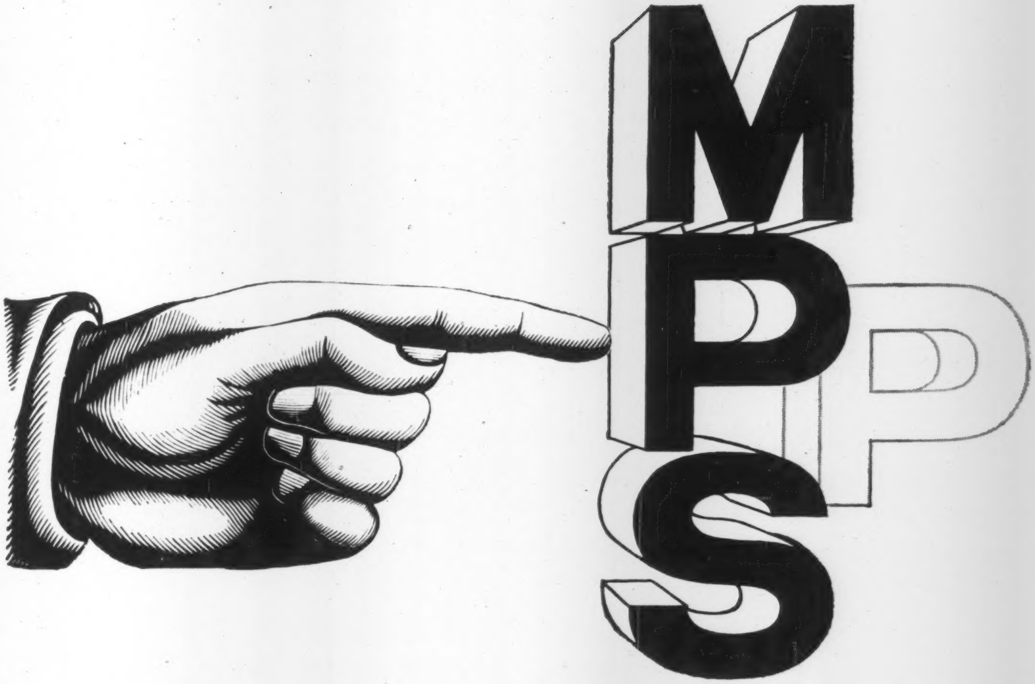


Trailer Follows Tank Truck To Distribute Bitumen

A tankless bituminous distributor trailer works while being towed behind a bitumen supply tank truck.

The unit, which gets its material from the towing truck, carries a 12-ft spray bar that can be extended to 24 ft, and a 50-hp engine connected to a 375-gpm pump. It also carries the controls needed for asphalt stabilization work or large sealcoating jobs.

Spray bar nozzles are at 4-in. intervals, and a single master valve controls all distribution functions. Seaman Corp., P. O. Box 3025, Milwaukee 18, Wis.



May we introduce you to a new advertising signature? You will be seeing it in many trade publications during the coming months, but more important, you will actually experience it in any dealings you have with us. It's more than the initials of our company name . . . it stands for a modern concept of real, integrated service to you, as our customers.

We suggest you find out from a Marion salesman or distributor what MPPS can mean to you and your pocketbook.

MARION POWER SHOVEL COMPANY
MARION, OHIO
A Division of Universal Marion Corporation

EXCLUSIVE
Gary Galok*
SUPER
ALUMINUM
GRATING

EXTRA STRONG . . . BETTER LOOKING . . . LIGHTER WEIGHT!

Exclusive swaging and forming process prevents cross bars from turning, twisting, coming loose or falling out . . . provides greater strength and rigidity than gratings using obsolete methods of joining bars. Only Gary Galok Aluminum Gratings offer all these advantages:

High strength to weight ratio. Minimum deflection . . . easier to install.

Non-rusting and corrosion resistant. Ideal where chemical conditions prevail.

Can be used for decorative purposes, sun-shades, grilles, etc. Can be anodized in sunfast colors to blend with surroundings.

Available with serrated or plain bars—in all sizes to meet practically every requirement.

*Patent Pending

Write for Bulletin

Dept. C-17, E. Seventh Ave., Gary, Indiana

ROCKWELL-STANDARD
CORPORATION

Grating Division, Gary, Indiana

High-Speed Earth Drill Tilts in Four Directions

The hydraulic-powered "Apache" drilling machine is designed for high-speed, production-type earth boring. It accommodates reaming and belling tools measuring up to 60 in. in diameter and drives 4½-in.-dia augers to 75 ft. The drill head tilts four directions for angle boring or vertical boring on slopes.

Optional equipment includes pole setter, turntable and wiggletail. The self-powered "Apache" can be mounted on a truck-bed or chassis. A power take-off model is also available. MOBILE DRILLING, INC., 960 N. PENNSYLVANIA ST., INDIANAPOLIS, IND.

U. S. Firm Imports Levels And Transits From Japan

A Japanese-made level has a compensator that automatically levels the line of sight accurately and maintains a true horizontal. The tubular level and tilting screw are eliminated.

The telescope is a 200-mm achromatic terrestrial with 24-power magnification and is image erecting. A 45-mm objective lens produces a brilliant image. All interior lens surfaces are coated.

The unit is sealed against moisture. It is said to be shock- and vibration-resistant and unaffected by sun while in use in the field.

The same firm is also marketing a 6½-in. transit. The 16½ lb instrument has an erecting, 28 power, 11½-in. telescope with coated lenses. It has a 40-mm objective lens. Horizontal circle is 6¼ in. in dia with graduations reading direct to 20 minutes. Vertical circle is 5-in. in dia graduated to 30 minutes with a vernier direct reading to one minute. UMECO OPTICAL DIV., 465 CALIFORNIA ST., SAN FRANCISCO, CALIF.

"The day-in, day-out dependability of Tournapulls is a big factor in our successful operations"...

"This has been proven to us over the last 14 years," says Delwin Berghuis, co-owner of Berghuis Construction Co., Prinsburg, Minnesota. *"We recently purchased our 18th Tournapull and to us there is nothing that will keep up with them."*

Newest LeTourneau-Westinghouse Tournapulls® in Berghuis's fleet are two 430-hp V-Power "B's". These 29-yd LW machines racked up an excellent availability record as they worked on a tough 1,450,000-yd Interstate-Highway 35 project near Sandstone, Minn.

94% availability

At time job was visited, hour meters on the V-Power B 'Pulls* showed one machine had worked 238 out of a minimum possible 257 hours of work time. The other V-Power "B" showed 247½ hours worked during the same period. That's an average of 94.4% availability for the two new LW machines!

There's a very good reason why V-Power "B's" *stay on the job longer* with *far less downtime*. All components are extra-rugged ... pinion and bull-gear faces are full 5¼" across, strongest in the industry! Main-case is heavy steel plate welded into a single unit. Short-coupled drive train runs on anti-friction bearings. What's more, when B 'Pulls need occasional servicing, your mechanics will find them *easiest of all machines to work on*... and *fastest to get back in action*.

We will be happy to give you complete details on LW Tournapulls and show you how they can handle your jobs at top efficiency for bigger profits. 'Pulls are available in sizes from 9 to 29-yd ... up to 430 hp.

*Trademark BP-2363-DCJ-1

On Interstate Highway 35 near Sandstone, Minn., Berghuis Construction used 5 big B 'Pulls. With the best power-to-weight ratio in its size, 430-hp "B" picks up heaping payloads fast ... accelerates fast ... chops minutes off haul and return time for more cycles per hour.

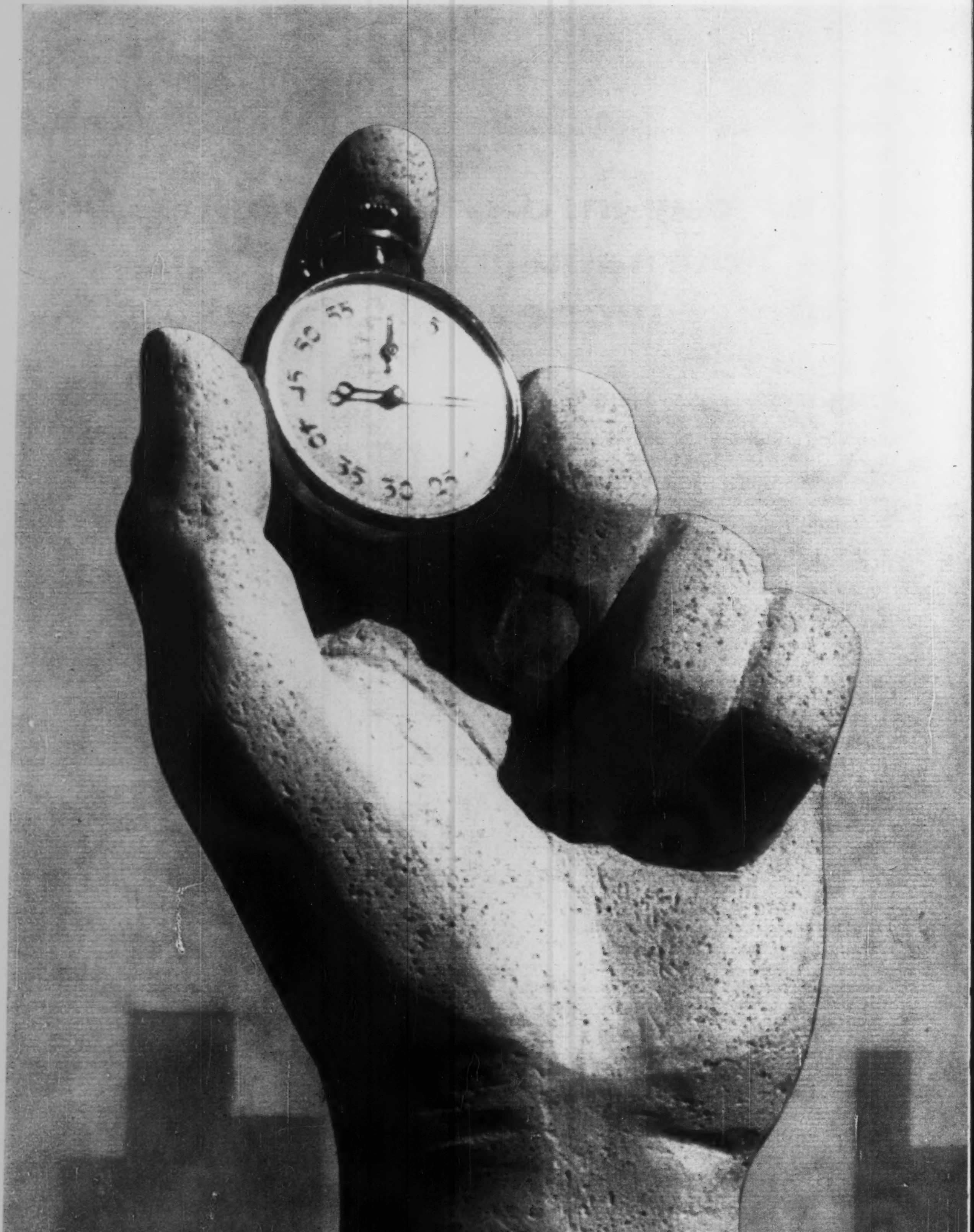
L W INTERSTATE HIGHWAY PROGRESS REPORT

Other production boosters in the Berghuis Construction spread are two LW graders — a "550" and a "660". Here, an LW 550 is shown leveling fill. These graders also maintained haul roads, kept the 'Pulls hauling at fastest practical speed.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit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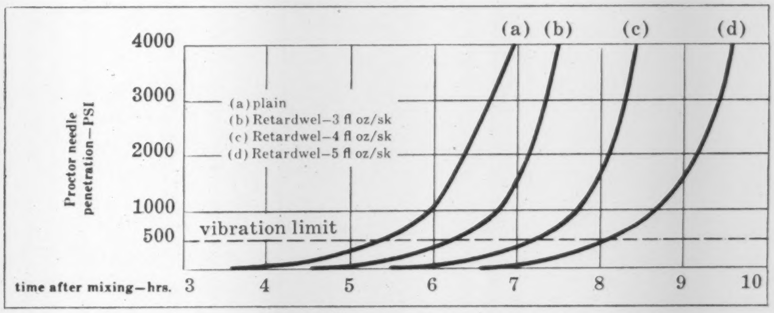
Control concrete setting time with J-M Retardwel

...the hot weather admixture that gives up to 50% higher 24-hour strength.

Retardwel®, a product of Johns-Manville, world's largest industrial user of portland cement, is the liquid admixture that controls concrete setting time and prevents premature stiffening due to high temperatures *without* loss of early strength.

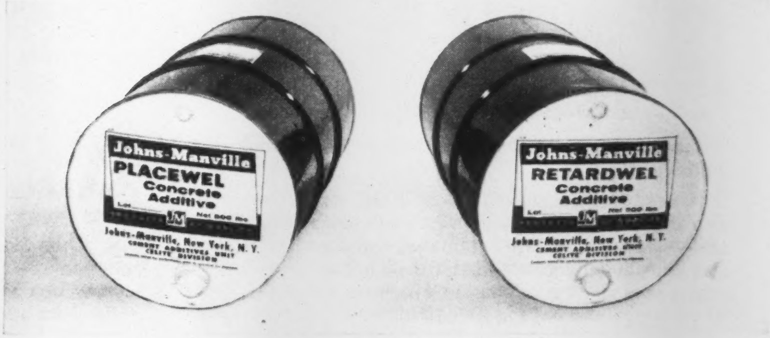
Retardwel permits a reduction in the water required for proper placing and provides all the advantages of concrete fabricated with a minimum paste content. Its use delays the initial set of concrete and provides a slower rate of heat evolution, thereby minimizing thermal stresses. Therefore, the use of Retardwel will aid in eliminating shrinkage cracks. Only 3 ounces of Retardwel per sack of cement will control setting time (see chart) and still increase 24-hour strength as much as 50%.



Retardwel's unique properties will also—

- ■ Increase durability
- ■ Improve dimensional stability
- ■ Increase workability
- ■ Reduce permeability
- ■ Increase density

For normal weather conditions, J-M Placewel® is recommended. Johns-Manville's two concrete admixtures have gained the acceptance of architects and engineers throughout the world. For full information write: Johns-Manville, Box 14, New York 16, N. Y.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RETARDWEL
Concrete Additive
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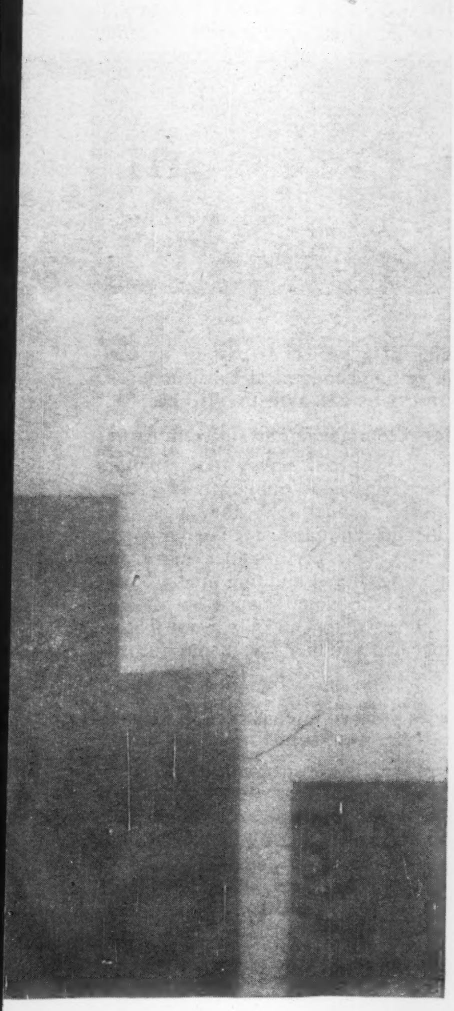


JOHNS-MANVILLE

Celite Division

M. Clare Miller, right, gets gavel from Governor John Volpe.

AGC Head

If there is such a thing as a contractor's contractor, M. Clare Miller is it—in training, in experience, in personal service to his industry, and even in appearance.

Mr. Miller, installed last week as president of the Associated General Contractors of America, stands 5 ft 11 in. tall, weighs 185 lb—and looks a lot bigger—his shoulders are broad, his neck is muscular.

His face is weathered and its severe lines reflect the burden of responsibility. But those same lines can change instantly into a broad grin or frame an explosive laugh, for Clare's sense of humor is as deeply ingrained as his sense of duty.

His vocabulary is that of a college professor, but when the occasion demands

Shoptalk With AGC's New President

Just before the AGC convention began last week, M. Clare Miller found time to relax with one of his favorite pastimes — shoptalk. ENR's Ed Young provided the questions and the ears. ➡

• What do you think of the profit margin in the construction industry?

The competition is so great that it's impossible to get a decent price. The average construction spread in the last two years hasn't been making enough profit to survive. Surprisingly enough, some of the biggest outfits are quitting — not going broke, but just deciding that it isn't worth while. This is particularly true of heavy and highway contractors who face the replacement of expensive equipment. When you figure that several types of earthmoving equipment can cost over $100,000 a unit — and then consider that the industry-wide profit is only 1 to 2% — well — blue chips look like a better investment.

• Are retainages still a serious problem for the highway contractor?

They used to be, but through our AGC joint committee with the AASHO we made a lot of headway on retainages — not on specified retainages — but on the retainages kept by engineers through their not bringing quantities up to the cut-off date. Of course, when the new 20-5-60 regulation of the Bureau (of Public Roads) came out setting up different procedures for testing and documentation of testing, we went right back to where we started from. But I don't think it's too bad. The engineers realize that money is a problem with the contractor, and that financing of a project is part of its cost. They're interested in getting economical construction so the problem is not nearly as bad as it used to be.

• Have you any policy recommendations for contractors?

We do feel that as a matter of basic policy all contractors — and particularly those engaged in public works — must strive for a better finished product. Also, they must keep better records and a more complete documentation of day-to-day job activities. Our performance more and more is being judged by legal and auditing minds. These minds are trying to make an exact science out of construction — and that's impossible. Our only proof that we are providing the specified product lies in our records. They must be complete.

• What weaknesses do you see in construction management?

One of the major problems in construction today is that contractors don't keep proper cost records and cost records are a must. Of course, there is a mean point somewhere and often that point is hard to find. If you go too far one way, your records are inadequate. If you go too far the other way, you bog down in your own information and it costs you too much. But if there's any question, it's better to go too far than not far enough.

Men and Jobs

Is a Contractor's Contractor

it, he is equally well versed in the idiom of the construction stiff. For business and formal events he dresses meticulously, but "just kicking around" he prefers to have his shirt open at the neck, tie pulled down, sleeves rolled up.

Mr. Miller insists he is a "small town boy" at heart. Born in 1907 on a Kansas farm, he was brought to McPherson, Kan, (pop. 9,996) before he was old enough for grade school. In McPherson, he was raised and educated; in McPherson, he lives; and if you can believe him, in McPherson he will die.

His love for and loyalty to a small town is no indication of narrowness either in thought or interests. For his construction work, he pretty much confines his activities to four Midwestern states—Kansas, Nebraska, Colorado and Wyoming. But at one time not long ago he owned virtually all the theaters in Honolulu. Much as he enjoys his ranch-style home in McPherson and his summer home in Evergreen, Colo., 40 miles west of Denver, he has travelled through much of the world. Construction is his first love, but he also owns automobile, truck and aircraft distributorships, oil wells, graneries and real estate.

Asked how he finds time for all these activities, Clare replies, "Hell, nothing takes any time except construction—the rest I run by telephone." This is no doubt an oversimplification, but associates insist that he does spend 95% of his working hours in construction.

When asked what his hobbies are, he replies, "Golf and construction—and I play a rotten game of golf." Be that as it may, there is nothing wrong with Miller's efforts in construction, either for himself or the industry. He has been active in AGC since 1937 and has served on numerous committees and held a variety of posts in the organization.

He was three times elected president of the Kansas chapter and during recent congressional highway deliberations, was one of the principal witnesses to testify in behalf of the industry.

Probably the one thing of which he is most proud is three years spent as co-chairman of the AGC-AASHO joint committee. He feels—and associates affirm—that the progress made during those three years towards a mutual understanding of the respective problems

You invite disaster if you don't keep adequate cost records.

• Do you think contractors have expanded too much?

Yes I do. That's a basic trouble in the industry, especially among the highway contractors. With the passage of the 1956 highway act we felt — and I believe rightly so — that we had to expand to meet the challenge. -- But we went too far and then had the rug pulled out from under us. Contractors — and not only those in highway work — have gone after volume and in doing so, spread their resources so thin that they decreased their profit potential. Now I'm preaching that fewer jobs will increase our efficiency — and our profits. I tell my men that two times one is only two, but ten times nothing is nothing. And I notice that many other outfits are thinking the same way. At least they seem to be pulling in their spreads.

• What are the principal problems confronting the AGC at this time?

Let me say that there are so many facets to the AGC that it is difficult to say just what are its principal problems. However, in this "New Frontier" that we are embarking on, changes are made virtually hour by hour — the proper analysis of these changes and the way they affect our business is of prime importance. It is also imperative that we decide how to adjust to these changes, and, if necessary, decide how to oppose changes that are detrimental to business. After all, anything that is detrimental to business is detrimental to all the people.

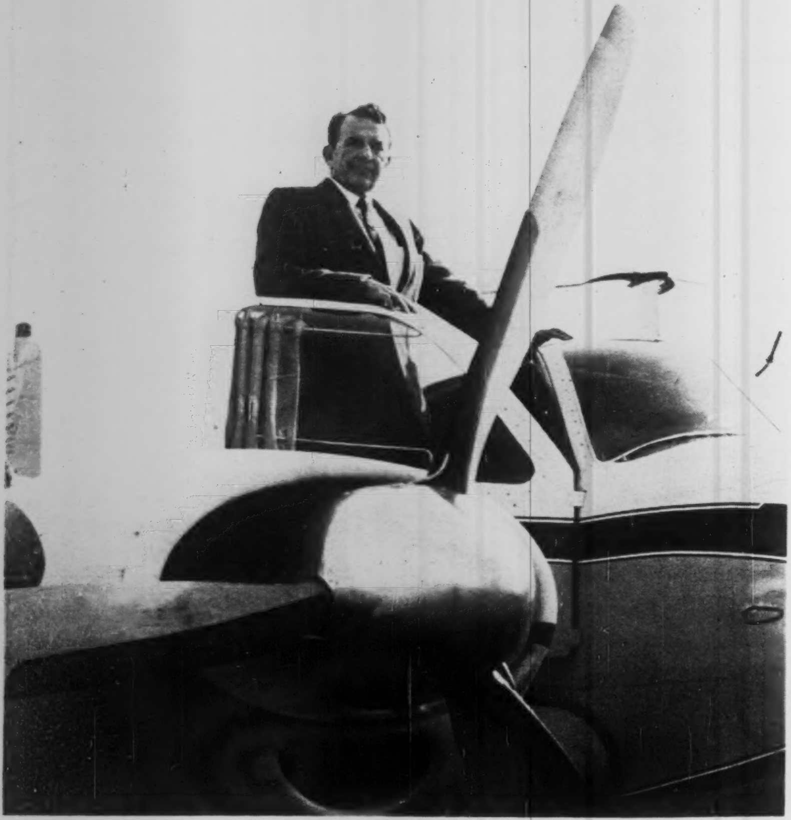
• What sort of thing might be harmful to business?

Anything that depletes capital. And many of the rules and regulations under which we work are directed at the depletion of capital. The loss of capital in our business — or in any business — is a serious thing. Taxes and depreciation policies — and any other policy that cuts into a normal and legitimate profit — and that's all I'm talking about — a normal and legitimate profit — are harmful to the industry.

• Is the present economic condition of the country causing you any concern?

Of course it is — but it's nothing that industry, particularly the construction industry, can't improve quickly. We have a highway program under way that can be expanded immediately, and we have other public works ready to go. We must convince the "New Frontier" that in the construction industry we have a well-oiled, well-organized machine that is fully capable of taking up the slack in employment, if it's given the chance. And in doing so, we can help build — with private enterprise — a greater America.

. . . Personally and professionally, Miller is flying high



A PILOT in his own right, Miller stands in his plane before a take-off. Last year, as AGC vice president, he travelled more than 90,000 miles.

of each group has resulted in lasting benefits for all concerned.

Miller's installation last week as president of the AGC was anticlimatic. Actually, he has been head of the organization since last December when he moved up from the vice presidency to replace John A. Volpe, who resigned the post after his election as governor of Massachusetts.

Mr. Miller's efforts in his own behalf also have been successful. In 1937 Clare and his brother Dale took over the management of the San Ore Construction Co., a business started in 1920 by their father and four other men. At that time, the business was relatively inactive; its net worth was less than $10,000. It was founded by a grain dealer (the Miller boys' father), two farmers (one of them an uncle of Dale and Clare), a railroad station agent and a physician. Each of the men contributed $50 to the partnership and ran it as a sideline on a somewhat hit or miss basis—never too profitably.

In fact, money was in such short supply in the Miller family in 1928 that Clare was forced to leave McPherson College at the end of his second year to take a job. (Clare is now a licensed professional engineer), but he says, "I got my engineering in the field." He worked as assistant county engineer until late 1929 when he took a full time job with San Ore. He had previously worked part time for the company as driver of a two-mule dump wagon and since 1923 had been keeping the company's books—a relatively simple job in view of the lack of activity.

Between 1929 and 1937 the partners in San Ore sold their interests to Clare and Dale. The last partner was bought out in 1937 for $1,600. A corporation was then formed with Clare as president and brother Dale as vice president. Five years later the two were joined by their younger brother Lloyd. Today the three run the business. Clare handles the making of company policy and the bidding, Dale takes care of equipment purchase and maintenance, and Lloyd supervises field operations. While the division of efforts is clearly defined, any one of the brothers is ready to back stop either—or both—of the others at any time—and often does.

San Ore now owns between $6 million and $7 million worth of heavy equipment and grosses between $6 million and $10 million annually. The work is mainly on highway construction, but the company has built numerous airports and has participated in joint ventures on the construction of several large dams, including Cedar Bluff in western Kansas and Falcon Dam on the Rio Grande.

Clare Miller's activities have by no means been restricted to civilian construction. He served in the Corps of Engineers in World War II (which he calls the "Middle War") and in the Korean conflict for a total of five years. In World War II, as a captain, he was in the China-Burma-India theater, building airfields for B-29 bombers. For this work, he received the bronze star. After his release from active duty in 1946, he sponsored a reserve unit for the Kansas AGC. With the start of the Korean conflict, this unit was called up, and Lieutenant Colonel Clare Miller was sent to Korea.

His outfit was mainly occupied with rebuilding structures on the Korean National Railroad that had been destroyed by the Corps of Engineers in an attempt to stem the southward advance of the North Koreans. "Don't ever let anyone tell you that our engineers can't demolish things," he says. "They ran carloads of dynamite and live ammunition into the middle of tunnels and then blew them up. When we were cleaning up the mess, we hauled out dirt, rocks, live ammunition and unexploded dynamite."

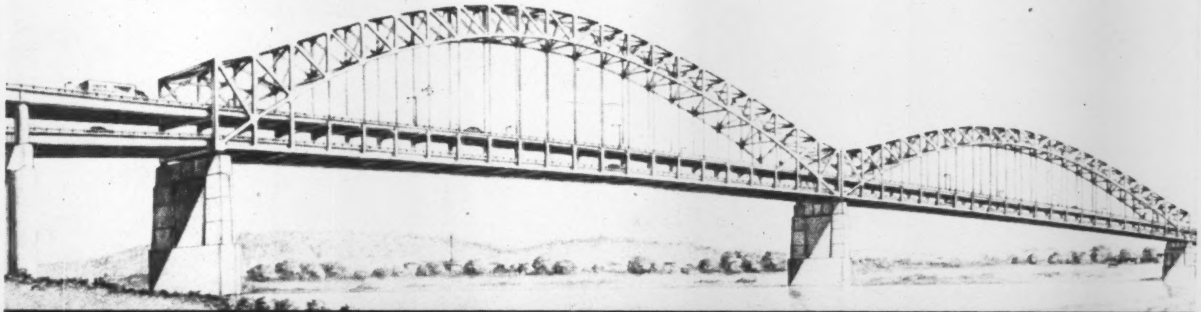
One of Clare's toughest—though no means biggest—jobs was rebuilding a 660-ft-long, 120-ft-high trestle. For this he was awarded the Legion of Merit. "We had to build booms for the high lifts required by the trestle bents. The girders we fabricated from 5-ft-high, 20-ft-long steel I-beams. We set them on rollers, doubled them up to make box sections, bolted the ends together to make them continuous, then pulled them out across the trestle bents with nothing more than truck winches."

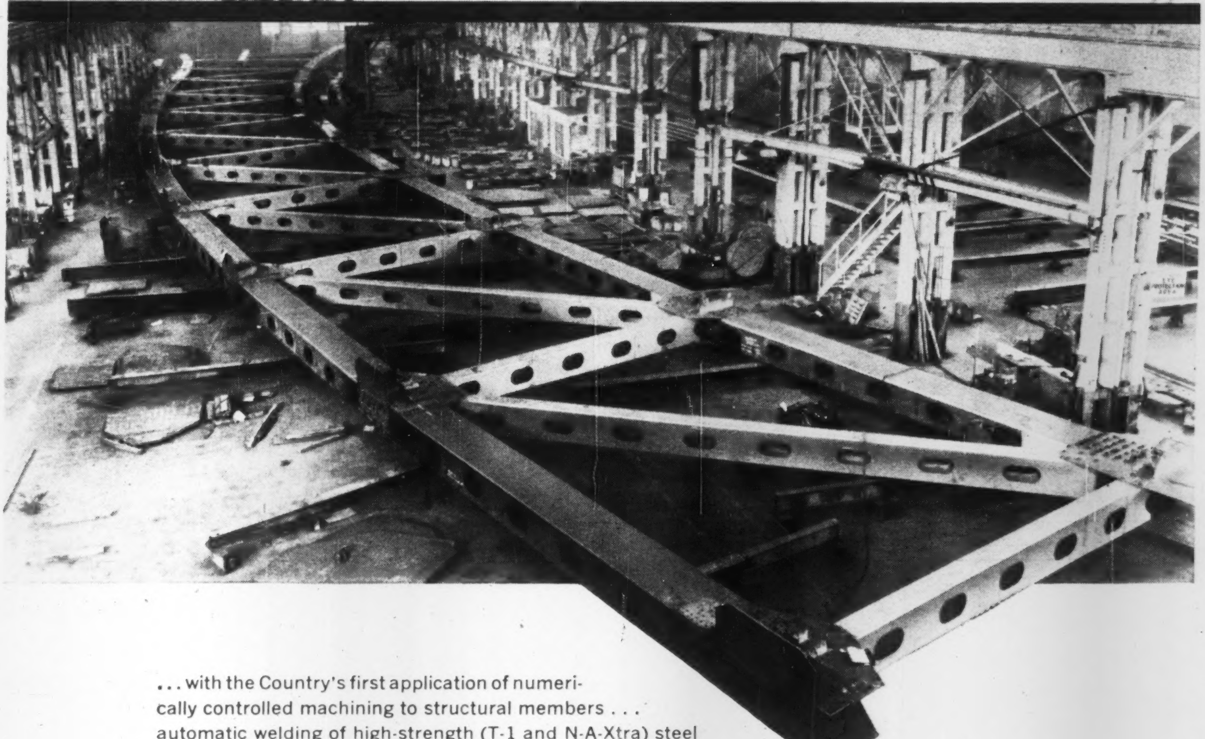
After the war Clare Miller got back to San Ore and civilian life. In 1955 he and his wife, Sadie, adopted a three-year-old girl. In 1957, they adopted three brothers, then 6, 18, and 30 months old. Meanwhile, an older daughter, also adopted, had made Clare a grandfather three times over with children the same ages as the boys he adopted.

His only misgiving about his new job with AGC is that it will keep him from his family much of the time. However, he says "It's only for a year—then I'll really make it up to them." And from the way he says it, you can tell that he will.

MAHON
pioneers progress in bridge fabrication . . .

The Nation's first 100,000 psi yield-point bridge—The New Albany Bridge over the Ohio River at Louisville, Ky. The 1600-ft., tandem-tied arch double-deck structure was designed by Hazelet & Erdal, Consulting Engineers. Erection: (Mahon subcontractor) John F. Beasley Co.





. . . with the Country's first application of numerically controlled machining to structural members . . . automatic welding of high-strength (T-1 and N-A-Xtra) steel . . . conveyorized painting of structural components. These are solid achievements—'system-engineered' by Mahon and now at work on the joint Indiana-Kentucky, New Albany Bridge project. To Mahon's Structural Division these fabrication innovations mean increased productivity; to you they mean design opportunity, highest quality and greater cost-savings . . . plus on-time delivery.

THE R. C. MAHON COMPANY *DETROIT 34, MICHIGAN*

Fabrication Plants—
Detroit, Mich. and Torrance, Calif.
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MAHON

All-wheel drive and

the TS-14 "Euc" is in a class by itself!

No matter what your scraper requirements may be — small yardage work for land conservation, secondary roads etc. to the biggest projects — the Euclid TS-14 can cut your earthmoving costs.

Here's performance and overall work-ability in a medium size scraper — 14 yds. struck and 20 yds. heaped — that's way ahead of any scraper of comparable capacity. With two engines (296 total h.p.) and separate Torqmatic Drives for each axle, the TS-14 gets a heaped load in a hurry . . . gets out of the borrow pit or cut fast . . . and highballs on the haul road. It can self-load in practically any material, and with a pusher it's a big producer on the toughest jobs.

If you want a one-man earthmoving spread that can work more days per year . . . that handles a wider range of jobs and isn't stalled by steep grades and adverse conditions . . . ask your dealer for the new catalog No. 555 or better yet, have him show you one in operation.

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Cleveland 17, Ohio

Plants at Cleveland and Hudson, Ohio
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- Hydraulic scraper operation
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- One-man earthmoving spread
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All-wheel drive "Twins" give you a longer, more profitable work season

GM GENERAL MOTORS

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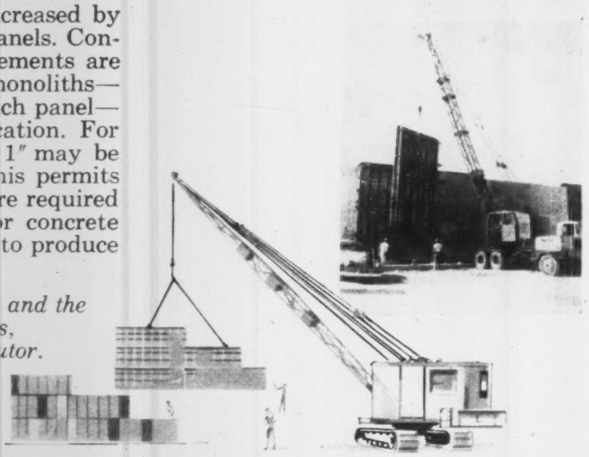
smart way
to speed concrete
forming . . .

Forming speed and economy can be greatly increased by crane handling big monoliths of UNI-FORM Panels. Contractors with repetitive section forming requirements are finding that the design of UNI-FORM Panel monoliths—in which metal filler angles are used between each panel—give them greater versatility and wider application. For example . . . tie rods of any size from ½" to 1" may be used to tie two monoliths into a wall form. This permits using the right tie size for the job. Fewer ties are required and sections can be placed, tied and ready for concrete faster. Panels may be added or removed at will to produce any monolith required.

For complete information on UNI-FORM Panels and the UNI-FORM System in crane handling operations, write today, or ask your nearby Universal Distributor.



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Track Boosts Underpass Cost

La Crosse Dredging Corp., Chicago, underbid nine competitors to take this $581,072 Wisconsin Highway Commission contract for Milwaukee's C & NW railroad underpass. The winning bid was only 3.2% under the second low, and 8.4% below the high of nine bids. E. G. Plautz, Milwaukee Metropolitan District, is the engineer on this job.

The four-span structure will be 258 ft c-c of end bearings, skewed 35 deg-30 ft-45 in. in relation to the highway. The underpass connects with the Lane Interchange on Milwaukee's East-West Expressway.

Unit prices show a wider spread than the total indicates. For example, bridge excavation ranged from a low of $1.25 to a high of $14.00 a cu yd, and unclassified excavation (accounting for 64,100 cu yd) slid from a high of $0.78 to a low of $0.55. Driving steel sheet piles prices were closer, from $0.50 to $2.00 a sq ft, but those for steel piles delivered stretched from $3.20 to $12.00.

Similarly, cast-in-place concrete piles delivered ranged from $5.00 to $8.00 a ft, and from $0.30 to $1.50 a ft for concrete piles driven.

A major item in La Crosse Dredging Corp.'s winning bid was the $4.25 unit price for laying 2,390 lf of track. By contrast, the high of nine bidders asked $8.21 for this item. This bypass track accounts for about 17% of the total cost of the underpass.

Minimum wage rate ranges include: skilled labor, $3.27-$3.87/hr; semi-skilled, $2.85-$3.87; and common, $2.85-$3.07.

The bidding included:

1C	**La Crosse Dredging Corp., Chicago, Ill**	**$581,072**
2	**Linnan Constr. & Eng., Inc., Brookfield, Wis**	**599,701**
9	**C. R. Meyer & Sons Co., Oshkosh, Wis**	**629,827**

Bids: 10-4-60 Items	Unit	Quantity	Unit Prices 1C	2
Clearing	stay	15	$55.00	$55.00
Grubbing	stay	15	55.00	55.00
Exc, unclassified	cy	64,100	0.60	0.55
for str bridges	cy	1,920	12.00	12.50
Bf, granular	cy	940	3.50	3.00
Base, std crse, crushed or granular	t	3,410	2.75	3.50
Conc masonry bridges	cy	1,434	40.00	41.50
Steel, bar, reinf, bridges	lb	113,400	0.12	0.125
str, carbon	lb	1,651,300	0.185	0.185
castings	lb	63,900	0.55	0.535
Copper, sheet	lb	920	4.00	3.20
Piles, steel sheet delivered	sf	540	3.70	5.50
driven	sf	540	0.50	0.50
Conc, test piles, cip, 3@45', 2@55'	ls	job	3,000	3,500
piles, cip, delivered	lf	8,030	5.00	6.50
driven	lf	8,030	0.50	0.30
Asphalt plank	sy	930	5.00	4.50
Railing, steel	lf	163	10.00	16.00
CMP, underdrain, 8"	lf	290	6.00	4.00
Topsoil, salvaged	sy	5,000	0.10	0.12
Fence, chain-link, salvage & replace	lf	835	3.00	3.00
temporary	lf	840	0.50	0.75
Waterproofing, membrane 5 ply	sf	8,470	0.50	0.45
3 ply	sf	135	0.40	0.35

Bids: 10-4-60 Items	Unit	Quantity	Unit Prices 1C	2
Drainage sys, deck	ls	job	9,000	12,500
Track, laying	lf	2,390	4.25	5.25
Ball, for main line track	t	960	5.00	5.40
Damproofing	sf	2,480	0.20	0.10
Bearing pads	sf	140	2.50	2.60

Starting date: march 1961
Completion time: 260 calendar days
Liquidated damages: $87.16 per day

Concrete Takes Half Of Vermont Bridge Cost

This $32,424 award to W. W. Wyman, Greenfield, Mass., is for widening and improving the Ayers Brook highway bridge, Randolph, Vt. The winning bid was 9.6% under Warner Bros., Inc., Sunderland, Mass., second low, and 27.9% below the high of seven bidders. Garibaldi Barberi is the engineer for the Vermont State Highway Department.

The existing structure is a single-span WF beam bridge with concrete deck, two 30 ft roadways, and two safety walks. Under this contract, the bridge will receive one new abutment, and a new concrete deck. The remaining abutment will be widened.

About 51% of the project's total cost will go for concrete. Wyman's low of $51.30 a yard for 253 cu yds of class C concrete contributed greatly to winning the contract. This accounts for 40% of the bid. It was $8.70 under the closest bid of $60.00 and $15.70 short of $67.00, the highest unit bid. By contrast, Wyman was high at $83.60 a yard for 45 cu yds of class B concrete, 11.6% of total cost. This was $11.60 above the second highest unit bid of $72.00, and $20.60 above the low.

Minimum wages include: skilled, $1.75/hr; semi-skilled, $1.35; and common, $1.25.

The bidding included:

1C	**W. W. Wyman, Inc., Greenfield, Mass.**	**$32,424**
2	**Warner Brothers, Inc., Sunderland, Mass.**	**35,534**
7	**Miller Const. Co., Windsor, Vt.**	**41,473**

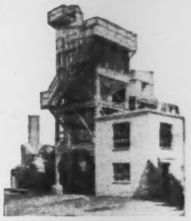
Bids: 9-14-60 Items	Unit	Quantity	Unit Prices 1C	2
Exc, solid rock	cy	32	$13.00	$10.00
channel	cy	20	2.50	4.00
structure	cy	425	7.00	4.50
Traffic, maintain for bri projects	ls	job	600.00	500.00
Bf, gravel	cy	88	2.00	3.00
Conc, modified, cl B[a]	cy	45	83.60	65.00
cl C[b]	cy	253	51.30	60.00
Steel, reinforcing	lb	13,821	0.123	0.14
structural	lb	22,190	0.15	0.17
Asph-asbestos coating	sy	8	6.00	10.00
Superstructure, remove present	ls	job	400.00	500.00
Equipment, for driving piles, furnish	ls	job	800.00	1,800
Timber, untreated, piling	lf	1,620	2.15	2.50
Fill, stone, heavy type	cy	20	10.00	14.00
Curb, granite bri, modified	lf	62	7.00	5.00
Railing, bri	lf	65	16.50	25.00

Completion time: June 1, 1961
Liquidated damages: $35.00 per day

[a] 6½ bags cement, max stone 1½"
[b] 6½ bags cement, max stone 1¾"

POSEY WORKS FOR BETTER-

IROQUOIS ASPHALT PLANTS



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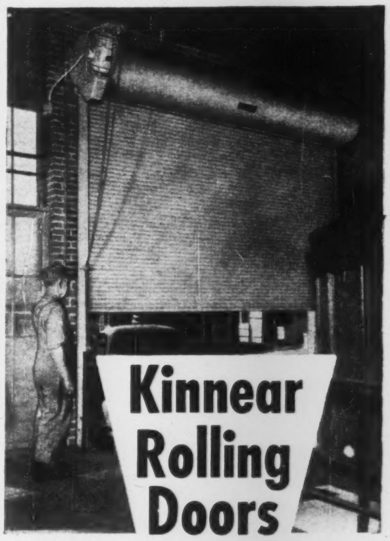
- Industrial Heating
- Foundry
- Large OD Steel pipe

561 S. PRINCE STREET LANCASTER, PA.



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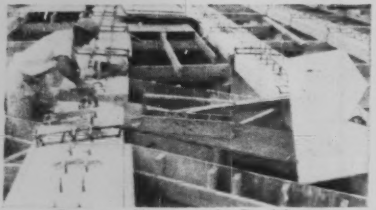
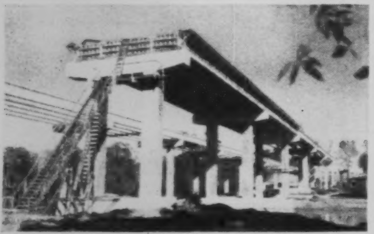
Interstate Highway Bridge—Iowa



Prescon Hangers in Position



Illinois Toll Highway Bridge

Building of today's overpasses, interchanges, and related projects require the latest in engineering advances and construction techniques. . . . And with increasingly keen competition on all types of concrete construction, contractors have found that the efficient forming methods of SUPERIOR Accessories offer all-important bidding advantages.

When you need form hangers for decks, threaded coil ties for walls, or heavy-duty screed supports for heavy screeding equipment, specify SUPERIOR and you'll finish the job on time! The jobs shown here used the SUPERIOR Accessories illustrated below.

Our experienced engineering service is available to prepare form layouts, estimates and quotations. This comprehensive service is offered free.

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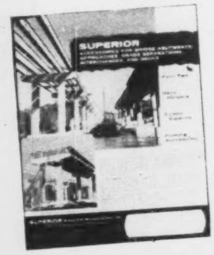
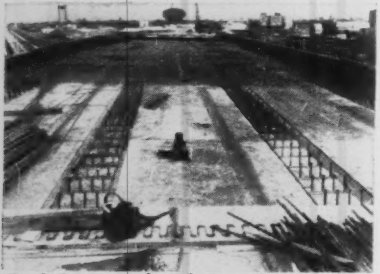


For Details request a copy of 6-page BULLETIN BB-458

Vallejo, Calif. Interchange



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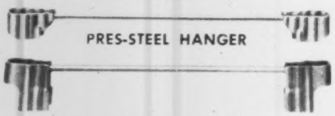
Chicago-Calumet Skyway

HEAVY-DUTY SCREED SUPPORTS

SCREED CHAIRS

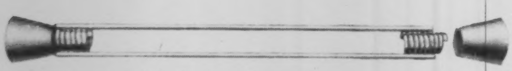
NEW



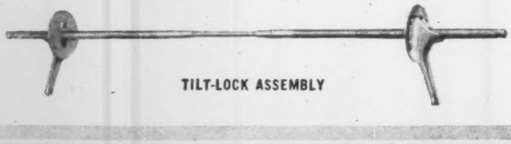
PRES-STEEL HANGER

HAUNCH PRES-STEEL HANGER

Prescon Hanger



CONE-FAST COIL TIE



TILT-LOCK ASSEMBLY

SUPERIOR Concrete Accessories, Inc., 9301 King St., Franklin Park, Ill.
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Materials and Labor Prices Monthly Market Quotations by ENR Field Reporters

See following ENR Issues for OTHER PRICES:

- Wood Products, Glass, Explosives, Chemicals: Last, Feb. 23; Next, Mar. 23.
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Mar. 2; Next, Mar. 30.
- Wage Rates, Building Board Insulation: Last, Mar. 2; Next, Mar. 30.
- Iron & Steel Products, Pipe: Last, Feb. 16; Next, Mar. 16.

Cement, Aggregate, Ready Mixed Concrete - F. O. B. City

Item	Quantity	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	# Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	†Toronto
Cement, Port., bulk	CL	bbl.	$3.80a	$3.91a	$3.50ef	$4.53ap	$4.02ag	$4.34e	$3.89	$3.40a	$4.39a	$3.91agq	$3.97a	$4.68ch	$4.17a	$3.65b	$4.20a	$4.01#ae	$4.62bj	$4.09a	$3.85e	$3.75ag	$3.11de#	$3.84t
paper	"	"	4.30a#	4.42a	4.43e	5.83ip	4.52ag	4.84e	4.77#	3.90a	4.89a	4.24a	4.52a	5.12ch	4.68a	4.17b	4.71a	4.51#ae	5.65bjk	4.59a	4.42e	4.47#a	3.36#de	4.20i
mortar	"	"	3.62a#	3.56a		4.90imp	4.15g	4.31e	4.19#ae	3.78a	4.89	3.29a	4.30a	5.60c	4.26a	3.97b	3.77a	3.63#e	5.00bjl	4.29a	4.86e	4.65a	3.72#de	4.20i
Gravel, 1½"	"	ton	2.25s#	2.80a#	2.53ns	3.00qsz	3.78#e	2.29#eu	2.25ae	2.55#a	1.95#	2.50#abm		2.56#at	2.70#ae	2.61b		1.95#a	2.68#aqv	3.40#as	2.02	4.25#bm	1.90#a	2.40
¾"	"	"	2.50s#	2.80a#	2.53ns	3.00qsz	3.78#be	2.34#eu	2.25ae	2.60#a	2.15#	2.50#abm		2.76#at	2.70#ae	2.61b	3.20bk	1.95#a	2.68#aqv	3.40#as	2.02	4.25#bm	2.15#a	2.40
Sand	"	"	2.00s#	2.25a#	2.13ns	3.00qsz	4.13#be	2.44#eu	1.75ae	1.65#	1.42#b	2.16#abm	1.70#a	2.41#at	1.60#ae	2.16#b	2.30bkw	1.55#a	3.08#aqv	2.40 3.40#as	2.12	4.25#bm	2.40#a	2.05
Crushed stone, 1½"	"	"	3.05s	2.85a#	2.75s	1.75qsz	3.95#be	2.55#eu	2.70fy	2.47		2.80#abm	2.10#a	2.41#at	4.00#ae		2.85blbb	2.00#a	2.00#aqv	1.75js	2.17	4.50#bm	1.90#	2.40
¾"	"	"	3.05s	2.90a#	2.75s	1.85qsz	3.95#be	2.74#eu	2.70fy	2.67	3.00#x	2.80#abm	2.10#a	2.46#at	4.00#ae		2.85blbb	2.30#a	2.00#aqv	1.75js	2.17	4.50#bm	2.15#	2.40
Crushed slag,* 1½"	"	"	3.90r	2.05a#	1.65d		2.25#e	1.80u	2.30#f			3.15aqaa				1.65d		2.25#a	2.10w	1.55			2.00	2.40
¾"	"	"	3.90r	2.00a#	1.75d		2.25#e	1.80u	2.30#f			3.50aqaa				1.75d		2.35#a	2.10w	1.55			2.00	2.40
Concrete block, 8"x8"x16"																								
Sand gravel	TL	ea	0.19o	0.18a	0.19	0.23o	0.26#e	0.19o			0.25	0.24u	0.22a	0.175f	0.20q	0.25r	0.265nwo		0.22rx	0.26#o	0.24	0.288s	0.20	0.26
Lt. wgt. agg	"	"	0.22o	0.18a	0.19	0.275ao	0.26#be	0.25ao	0.23f	0.255	0.27ao	.27#au	0.27c	0.25		0.25	0.32bwo	0.20	0.22rx	0.32#co	0.28cl	0.384cs	0.28t	0.30cq
Concrete, ready-mix'r		cy	13.00g	13.50ou	14.75q	15.00q	14.50e	15.00gr	17.25u	11.50x	11.90	15.50eaa	13.50	12.46hlx	14.55f	14.00o	17.60ay	13.90z	16.15o	13.65 14.10q	12.50cw	14.70j	10.80ek	13.75q

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SAND, GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons up. •d Less 5¢ disc. 10 days. •e Less 2% disc. 10th. •f Less 2% disc. 15th. •g Less 5% for cash. •h Less than 5 tons. •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •o F.o.b. yard. •r less 5% disc. 15th. •s Less 2% disc. 10 days. •t Less 10¢ disc. 10 days. •u Less 5¢ disc. 10 days. •v Less 2% disc. 15 days. •w Less 10¢ disc. 15 days. •x Incl. 35¢ switch charge. •y F.o.b. dock. •z 5-8 tons. •aa Less 5% disc. 15 days. •bb Less 2% 25th of month

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete. •e 5¼ x 8 x 12 in. •f 8 x 4 x 16 •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18. •o Less 2% disc. 10 days. •p Less 2% disc. 10th, •q Less 5% disc. 10th. •r Less 2% disc. 15 days. •s Less 2% disc. cash. •t Siporex, 7 x 8 x 18. •u Less 5% disc. 10 days. •v Less 12% disc. 15th.
READY MIXED CONCRETE: •a 6 cu yd or over del. Man. •b 25 cu yds or more. •c 10-100 cy. •d 1-3 mi. zone add 15¢ for ea. add'l 1-mi. zone. •e 3,000 lb comp. •f 2,500 lb. comp., less 5% disc. 30 days. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 6% mun. & prov. tax. •l 1:2½:3½ base price. •m F.o.b. yard. •n Plus escalator clause. •o Less 2% disc. 15 days. •p Less 50¢ disc. 15 days. •q Less 2% disc. 10 days. Add 50¢ per zone. •r 2000 wgt. •s Less 5% disc. 10 days. •t Incl. 50¢ heating. •u Less 2% disc. 15th. •v Sat. del. +50¢. •w 10-100 cy. •x Del in zone 20-B. •y less 25¢, 10 days. •z less 1% in 30 days •aa 6 bag mix

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Richard City, Tenn	$3.55	Bath, Pa	$3.50	Northampton, Pa	$3.50	Leeds, Ala	$3.40	Howes Cave, N. Y.	$3.50	Oswego, N. Y.	$3.60	Green Bay, Wis	$3.60
Clinchfield, Ga	3.55	Lesley, Pa	3.50	Universal, Pa	3.60	Duluth, Minn	3.60	Muskegon, Mich	3.55	Cleveland, O	3.65	Ironton, O	•3.65
Kingsport, Tenn	3.55	Buffington, Ind	3.55	Waco, Tex. (+10 tax)	3.35	Hudson, N. Y.	3.50	Saginaw, Mich	3.60	Alsen, N. Y.	3.50	Montreal, Cana	2.80
West Des Moines, Iowa	3.65	Independence, Kan	3.35	Giant, S. C.	3.55	Alpena, Mich	3.50	Wyandotte, Mich	3.60	Toledo, O	3.60	W. Winfield, Pa	3.61
Nazareth, Pa	3.50	Hannibal, Mo	3.55	Steelton, Minn	3.60	Detroit, Mich	3.60	Buffalo, N. Y.	3.55	Milwaukee, Wis	3.60	Security, Md.	3.50

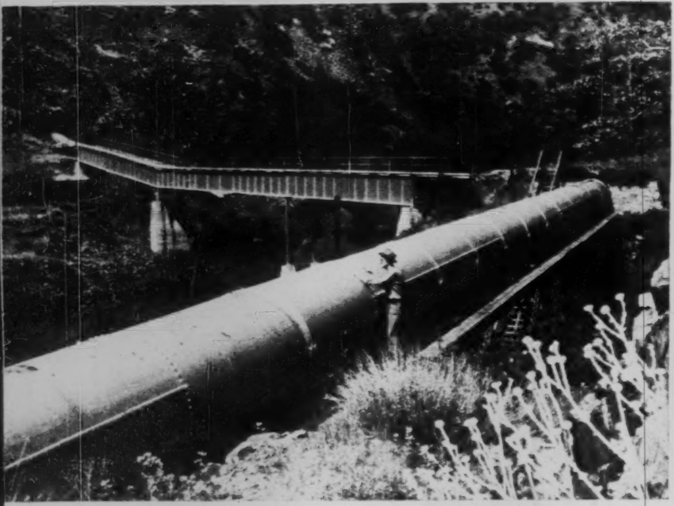
•a 280 lb. bbl.

Paving Brick, Block, Asphalt, Road Oils - F. O. B. City

Item	Quantity	Unit	Atlanta	Baltimore	Birmingham	Boston	Chicago	Cincinnati	Cleveland	Dallas	Denver	Detroit	Kansas City	Los Angeles	Minneapolis	New Orleans	New York	Philadelphia	Pittsburgh	St. Louis	San Francisco	Seattle	Montreal	Toronto
Paving brick, block-																								
Brick, 3"x4"x8½	CL	M	e	e	e	e	$150.00#ab	e	e	e	e	e	e	e	e		e	e	$60.00k	e	e	e	e	e
Granite, 4"x4"x8"	q	M	e	e	$66.00i	e	95.00#a	e	89.50	40.80	62.00a	$114.00	e	e	e		e	e	95.00n	e	$70.00	e	e	$120.00f#
Wood, 3½" 16 lb	...	sy	e	e	e	e	3.95/4.00aj	e	6.30	e	e	e	e	e	$3.73	e	$3.70f	e	6.35n	e	e	e	e	4.50f
Asphalt, paving																								
Tank car	CL	ton	$11.82W	$21.00	25.12 O	$22.00apS	22.00b	$24.00SU	26.00tA	26.90		31.50#	$18.75cl	$19.00dmx	23.70	$20.00e	22.99mO	0.22u	31.20isv	$19.74	22.50gdd	$24.00z	$30.50n	38.90
Drummed	CL	gal.	12.20W		25.69	46.00apS	32.00b			46.35							67.83mO			21.65	41.00gdd	47.00h	43.60n	59.01ee
Asph. binders, fluxes																								
Tank car	CL	ton	0.1182W	0.9i	0.1069	22.00avS	20.40bv	24.00ffv	26.00tvA	.1138		32.20#	18.75cv	19.00dvx	23.70	20.00ev	22.99vtO	0.22u	31.20isv	.1825f	22.50gkvdd	33.00vscc	0.167n	0.2075ee
Drummed	CL	gal.	0.1220W	0.18i	0.1093	46.00avS	30.40bv			.1983							67.83vtO			.1825	40.00gkvdd	38.50	0.211n	0.2773w
Asph. cutback, MC																								
Tank car	CL	ton	0.1222W	0.9i	0.1162w	0.105awF	.10bwH	0.1165twAF	0.1165wSU	30.50		30.24wl#	.0825cwJ	20.50dKx	0.105w	0.095ew	10.61uF	0.10U	0.1403#S	.09f	22.50gNdd	25.50KE	17.80nuE	0.222wee
Drummed	CL	gal	0.1258W	0.18wE	0.1188Ow	0.22awF	.18bwH			52.45							29.62uF			.092fw	46.50gNdd		22.20nuE	0.2704
Road oil, tank car	CL	gal		0.95i	0.1006O	0.14aOR	.08b	0.109		.1100		27.84v	.06751c	19.50dvaa	0.95	0.085eB		0.095U	0.14#S	.165f	23.25gvWdd	28.75hvY	0.155n	0.2334w
Asph. emul. RSI																								
Tank car	CL	ton	0.1288W	0.10i	0.1069	0.15OR		0.1265	0.1265tA	0.1138			.10	21.40jXv	0.137bb	0.095eBL	10.15u		0.1403i	.18250	23.50gvXdd	25.80hvX	0.242n	0.212Zee
Drummed	CL	gal	0.1327W	0.19i	0.1093O				0.21A	0.1983		0.24		.1842jXv		0.1905eB	20.81u			.30	.2023gXdd	49.80hrvX	0.27nX	.268Zee

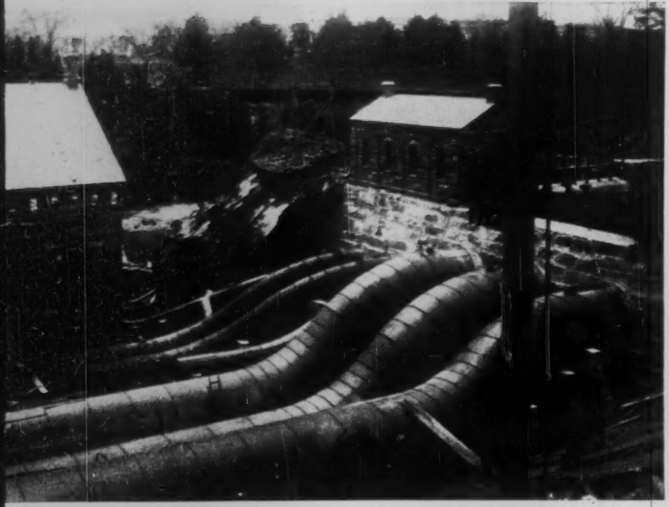
PAVING BRICK & BLOCK: •a Less 2% disc. 10th. •b 3 x 3¾ x 8. •c 2¼ x 8 x 4. •d Truckload lots. •e Not used. •f 2" interior 6 lb tr. •g Less $1 Mdisc. 15th. •h 2" tr. 8 lb. •i 3 x 3⅝ x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale. •m Pine; oak $6.57. •n Truck del. •o Less $1 M disc. 15 days. •p Used: $40; new: $80. •q Lots of 50M.
ASPHALTS: •a F.o.b. refinery, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segundo. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. refinery, Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40 300 penetr. •n F.o.b. refinery, Montreal. Fed. tax included; add 6% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60 70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150 300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS •H RC 0-5 incl. •I MC 4. •J M[illegible] RC $0.095. •K MC 3, 4, & 5. •L MS. •M MC 1-5, RC 1-5, $0.0918. •N MC 3. •O Truckload •P F.o.b. refinery, Atlanta. •Q F.o.b. Eldorado, Ark. •R Delivered within 50 mi. •S Less 2% disc. 10 days, net 30. •T Less 1% disc. 10 days. •U F.o.b. refinery. •V Less 2% disc. 15 days. •W SC 2. •X RS 1. •Y SC 1. •Z Incl. 10% Sales Tax. •aa SC 3, 4, & 5. •bb RS 3. •cc In used drums. •dd less disc of $1 ton. •ee 45 Imp. gal. drums •ff 60-150 penetration

FROM COAST TO COAST MORE CITIES REPORT:



1912 Denver—This 60-in. ID main was laid through a tunnel and over the South Platte River. The Water Department reports that despite a temperature range of 120 deg, "the pipe is in very good condition and is still giving satisfactory service."

1909 Springfield, Mass.—Originally installed with the expectation of serving perhaps twenty years, Springfield's 22,000-ft, 42-in. ID supply main is in its fiftieth year. Flow tests show, according to the Municipal Water Works, "that steel lines with proper coatings will give very long life as far as carrying capacity is concerned."



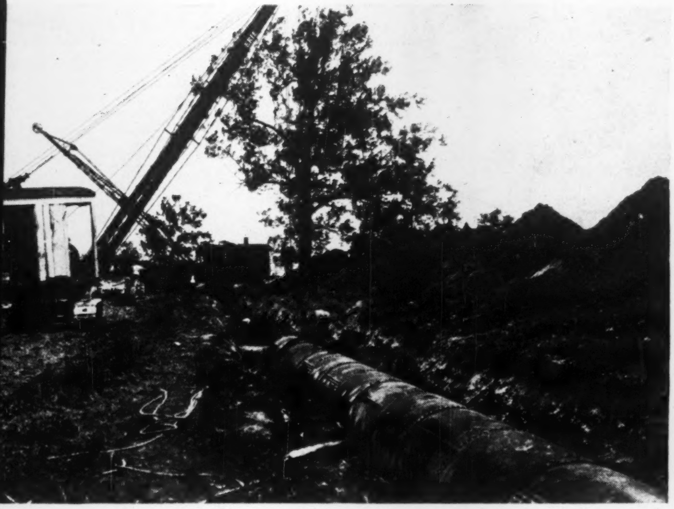
1899 Passaic Valley, N.J.—These are the giant steel penstocks at Little Falls pumping station. Since then the major portion of the water supply for the cities of Paterson, Passaic, and Clifton has passed through these venerable pipes.

1921 A washout completely undermined this thin-walled (1/4 in.) 30-in. steel main in Paterson. It held—even before being supported as shown here. Could any other pipe material stand the gaff?

Steel

for Strength
. . . Economy
. . . Versatility

"Our old steel mains are still on the job"



1925 St. Louis—The steel main shown here being installed was by no means the city's first. They laid a 7-ft ID line nearly twenty years before. The Water Department reports "satisfactory service," and expects the steel pipe to remain on the job for many years to come.

1896 New Bedford, Mass.—The service life of the city's 8-mile, 48-in. ID steel main has spanned the years from horse-and-buggy days to the jet age—with never a failure.

The evidence is clear and overwhelming: large-diameter steel mains, properly protected and installed, give upwards of fifty years of eminently satisfactory service.

What's more, steel pipe is not subject to the costly and annoying failures that plague pipe made of brittle materials.

Remember: *every single length of steel pipe is tested at the shop in accordance with AWWA standards—usually to twice the working pressure.*

Specify tar-enameled steel pipe for your next water main.

For information about our new types of slip-joint pipe for fast, economical installation, contact the Bethlehem sales office nearest you.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA. *Export Sales:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

NEW ENGLAND

HEAVY CONSTRUCTION—BA

▲ N. H., **Nashua**—BA 4/12—Federal Aviation Agency, N. Y. International Airport, Jamaica, N. Y., AIR ROUTE TRAFFIC CONTROL CENTER. Plans deposit $50. CD 11/23/60.

BUILDINGS—BA

▲ N. H., **Nashua**—BA 3/15—Memorial Hospital, 8 Prospect St., HOSPITAL ADDN., ALTERATIONS, Prospect St. $1,000,000. Markus & Nocka, 251 Columbus Ave., Boston, Mass., archts. CD 5/25/60.

▲ Mass., **Hingham**—BA 3/23—Town, Supt. Schools, 229 North St., JUNIOR HIGH SCHOOL, off Main St., Queen Anne Site, South Hingham. $1,567,000. Plans deposit $100. Smith & Sellew, 283 Dartmouth St., Boston, archts. CD 11/1/60.

BUILDINGS—SLC

▲ Mass., **Cambridge**—Massachusetts Institute of Technology, 77 Mass. Ave. soon lets contract EARTH SCIENCE CENTER, East Campus. $5,000,000. I. M. Pei & Assoc., 385 Madison Ave., New York, N. Y., archts. Severud, Elstad, Krueger Assoc., 145 Lexington Ave., New York, N. Y., structural engrs. Syska & Hennessy, Inc., 144 E. 39 St., New York, N. Y., mechanical engr. CD 1/27/61.

BUILDINGS—LB & CA

▲ **Vappi & Co., Inc.**, 240 Sidney St., Cambridge, Mass., CA **$1,250,000**, WAREHOUSE, First Ave. and Cabot St., NEEDHAM, MASS. Firestone Tire & Rubber Co., Real Estate Dpt., 200 Firestone Parkway, Akron, O. BA 2/14. CD 2/10/61.

▲ **J. F. White Constr. Co.**, P. O. Box 358, Westwood, Mass., LB **$1,224,000**, PHA Mass-31-3, 100 units HOUSING FOR THE ELDERLY, SOMERVILLE, MASS. City Housing Auth., 30 Memorial Rd., Somerville, Mass. Hajian, Malasian Assoc., 128A Tremont St., Boston, Mass., structural engrs. BA 2/24. CD 1/30/61.

▲ **Charles J. Lo Dolce**, 38 Fernwood Rd., West Hartford, Conn. Owner Builds, **$1,000,000**, 100 HOUSES, NEW BRITAIN, CONN.

▲ **Hayes Constr. Co.**, 1285 East St., New Britain, Conn., LB **$1,324,000**, (13 bidders), Proj. No. CH-Conn-11(DS) STUDENT DORMITORY, FACULTY RESIDENCE, STUDENT UNION, Asylum Ave., WEST HARTFORD, CONN. St. Joseph College, 1678 Asylum Ave., West Hartford, Conn. BA 2/24/61. CD 2/6/61.

▲ **Wadhams & May Co.**, 155 Lewis St., Hartford, Conn., LB **$1,591,000**, (14 bidders), HIGH SCHOOL, SOUTH WINDSOR, CONN. Town, Pub. Bldg. Comn., Town Hall, South Windsor, Conn. BA 2/21/61. CD 1/24/61.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

▲ **New Jersey**—BA 3/16—Dpt. Conservation & Economic development, 205 West State St., Trenton. Contracts RV-1 and RV-2, SOUTH DAM and TUNNEL and NORTH DAM, DIKE and relocated ROAD and appurtenant works, Round Valley Reservoir Proj., near Lebanon Boro, Clinton Twp., Hunterdon Co. $8,000,000. Plans deposit $25. CD 10/23/59.

BUILDINGS—BA

▲ N. Y., **New York**—BA 3/21—New York City Housing Auth., Rm. 312, 299 Broadway, Zone 7, fdns. and general contract, heating and ventilating, electric work and plumbing work Baychester HOUSES, Proj. NYS-92, Schieffelin Ave., E.229 St., Schieffelin Pl. and E.225 St., Bronx Boro. Plans deposit $75; furnishing and installing elevators, Plans deposit $25. CD 5/2/60.

▲ N. J., **Kinnelon**—BA 3/28—Bd. Educ., Kiel Avenue School, Kiel Ave., Kinnelon,
Contr. 1—general constr. incl. all work not covered by other contracts.
Contr. 2—structural steel work.
Contr. 3—plumbing and drainage work incl. sewage treatment plant.
Contr. 4—heating and ventilating work.
Contr. 5—electrical work.
Contr. 6—kitchen equipment.
Contr. 7—laboratory equipment, KINNELON HIGH SCHOOL, Comn. 698-C-99. Approx. $1,650,000. Plans deposit $100. Emil A. Schmidlin, 50 Evergreen Pl., East Orange, archt.-engr. CD 1/29/60.

HEAVY CONSTRUCTION—LB & CA

▲ **Kuchar Bros.**, 7 Franklin Ave., Montvale, N. J., LB **$2,078,000**, (5 bidders), general contr. SEWERAGE SYS., SECAUCUS, N. J. Town, Town Hall, Secaucus, N. J. Mayo, Lynch & Assoc., Inc., 90 Hudson St., Hoboken, N. J., engrs. BA 2/21. CD 1/25/61;
Badaracco Bros. & Co., 403 Washington Ave., Hoboken, N. J., LB **$99,290**, (4 bidders), electrical contract sewerage sys. (Secaucus, N. J.).

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, ROAD,
James Julian, Inc., 405 N. Port Rd., Wilmington, Del., CA **$1,223,315**, grading, paving and drainage 4.29 mi. US 50 from Rte. 704 to Kenilworth Interchange, incl. 3 interchange ramps near Washington, P 631-42-320, Prince George Co. CD 1/26/61, under LB.

▲ **E. C. Ernst**, 1624 14th St., N. W., Wash., D. C., CA **$1,115,735**, conversion ELECTRICAL INSTALLATIONS in U. S. Capitol Buildings and Grounds, WASH., D. C. Office of Architect of Capitol, U. S. Capitol, Wash., D. C.

BUILDINGS—LB & CA

▲ **Reader-Green Constr. Corp.**, 1 N. Cumberland Ave., Jericho, N. Y., CA **$1,523,250**, general contract, incl. site work, JUNIOR HIGH SCHOOL, NORTH BABYLON, N. Y. Bd. Educ. UFSD No. 3, Weeks Rd., North Babyon, N. Y. BA 12/21. CA 2/24. CD 12/28/60, under LB.

▲ **LeChase Constr. Corp.**, 29 Saratoga St., Rochester, N. Y., CA **$1,671,782**, Bishop Kearney HIGH SCHOOL, Irondequoit; CA **$1,661,626**, Cardinal Mooney HIGH SCHOOL, Greece, ROCHESTER, N. Y. Catholic Diocese of Rochester, Chestnut St., Rochester, N. Y. Stickle & Assocs., 2422 Prospect St., Cleveland, O., archts. CD 4/1/60.

▲ **Samuel Singer & Son**, 89-30 161st St., Jamaica, N. Y., Owner Builds, **$1,090,000**, 12 story APARTMENT, North Broad and Aberdeen Ave., ELIZABETH, N. J. Joseph S. Riggio, 120-44 Queens Blvd., Kew Gardens, N. Y., archt.

▲ **The Johansen Co.**, 237 South Ave., Garwood, N. J., CA Est. **$5,000,000**, PLANT, North Ave., ELIZABETH, N. J. General Chemical Division of Allied Chemical Corp., 61 Broadway, New York, N. Y. CD 7/28/60.

▲ **Zwigard Constr. Co.**, 10 East Willow St., Millburn, N. J., CA **$1,260,507**, HIGH SCHOOL, Kent Place Blvd., SUMMIT, N. J. Bd. Educ., Morris Ave., Summit, N. J. BA 1/24/61. CD 1/31/61, under LB.

▲ **B. J. Lucarelli & Co.**, 1100 McCarter Hy., Newark, N. J., CA **$1,004,000**, 9 story LOUIS JOSEPHSON HOMES for elderly, Oakland St. at Hoffman Ave., TRENTON, N. J. Trenton Housing Auth., 875 New Willow St., Trenton, N. J. BA 2/15/61, CA 2/21/61. CD 2/2061, under LB.

▲ **All State Constr. Co.**, Union Blvd., Bethlehem, Pa., CA **$1,200,000**, SHOPPING CENTER, W. Union Blvd., BETHLEHEM, PA. Philip J. Levin, U. S. Hy. 22, North Plainfield, N. J. George M. Ewing Co., Broad and Chestnut Sts., Phila., Pa., archt.

▲ **Joseph F. Hughes & Co.**, 5 E. Franklin St., Baltimore 2, Md., CA **$3,810,000**, masonry, concrete, steel HEADQUARTERS for Dpt. of Motor Vehicles, Ritchie Hy., near GLEN BURNIE, MD. State Dpt. P. Imprvts., 301 W. Preston St., Baltimore 1, Md. CD 2/7/61, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; Industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **Merrimack Constr. Corp.**, 4916 Del Ray Ave., Bethesda, Md., Owner Builds, **$1,120,000**, 160 unit garden type APARTMENT, Congressional Airport Lane and Jefferson St., ROCKVILLE, MD. Cohen, Haft & Assocs., 7961 Eastern Ave., Silver Spring, Md., archts. CD 12/9/60.

▲ **Hill & Kimmel, Inc.**, 1103 Wayne Ave., Silver Spring, Md., CA **$1,322,044**, White Oak JUNIOR HIGH SCHOOL, Silver Spring (formerly reported as Hollywood Junior High School, Hollywood), ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Duane & Lawrence Assocs., 1726 M St. N.W., Wash., D. C., archts. CD 4/21/60.

SOUTH

BUILDINGS—BA

▲ Fla., **Hollywood**—BA 3/15—South Broward District Memorial Hospital, 3501 Johnson St. (selected list of bidders), HOSPITAL ADDNS. ALTERATIONS, 3501 Johnson St. $3,500,000. Hollywood Assoc. Archts., 218 N. 20th St., Start & Moeller, 1823 Mayo St., C. R. Moberg, 1928 Tyler St., J. M. Hartley, 1909 Harrison St., all above in Hollywood, Fla., archts. M. H. Connell & Assocs., 315 NW 27th Ave., Miami, Fla., struct. engrs. Sloan Engr. & Assocs., 1100 NE 125 St., Miami, Fla., mech. engrs., Bids Feb. 16, rejected, LB **$3,565,000**. CD 2/23/61, under LB.

▲ Fla., **Palm Beach**—BA 3/20—Morris Calig Enterprises, c/o Robson & Gosbocker, archts., 937 Belvedere Rd., West Palm Beach, 7 story, U-shaped CB-S and RIC 80 units APARTMENT, air-conditioned, swimming pool. $1,000,000. Ernest A. Hussar, Jr., 201 N.W. 119th St., Miami, engr.

▲† S. C. **Charleston**—BA 3/30—Dist. P. Wks. Office, 6th Naval Dist., Bldg. No. 13, U. S. Naval Base, CAPEHART HOUSING PROJECT, 500 units, U. S. Naval Base, NBy-34594. Plans deposit $50. CD 8/22/60.

HEAVY CONSTRUCTION—LB & CA

▲ **FLORIDA**—State Road Dpt., Tallahassee, Bids opened 2/23, ROADS,

Fla.—**Sam Davis Constr. Co.**, Box 1256, Dunedin, Fla., LB **$792,917**, (8 bidders), constructing divided 4-lane facility incl. grading, limerock base type I b. conc. surf. binder course, sections Type I b. conc. surf. course with b. conc. leveling course, resurfacing, approx. 7.306 mi., between north city limits Cocoa and Delespine, Federal Aid Project No. F-003-5(11) (Job No. 70020-3177), SR 5 (US1) Brevard Co.;

Fla.—**Bay Drdeging Co.**, Box 1484, Tampa, Fla., LB **$1,926,590**, (7 bidders), grading, 8-lane divided limerock base, type I b. conc. surf. course, binder course, limerock base Type I b. conc. surf. course, binder course, shoulder pavement, storm drainage five dual grade separation bridges (OAL-1,047.38 ft.) conc. deck, prestressed conc. beam on conc. piers founded on prestressed conc. piling, aluminum handrail, roadway lighting, approx. 2.085 mi., between west shore Old Tampa Bay and Dale Mabry Highway in Tampa, Federal Aid Interstate Project No. I-4-1(33)12 (Job No. 10190-3407), SR 400, Hillsborough Co. CD 2/2/61.

▲ **LOUISIANA**—State Dpt. Hys., Rm. 426, Headquarters Admin. Bldg., Baton Rouge, Bids opened 2/22, ROADS,

La.—**W. R. Core**, Covington, La., LB **$1,127,757** (2 bidders) aggreg. base course 13.439 mi. Manchac Frenier Hy., Rte. 1-55, SP 452-01-09 FASP 1-55-1 (15)1, St. John the Baptist Parish;

La.—**Delta Paving Co.**, Box 8044, New Orleans, La., LB **$1,078,012**, (2 bidders) grading, drainage structure, wid'n. existing concrete pavt. 2.454 mi. Downman Rd., Lee's Station. SP 6-04-07 FASP U-201 (15), Orleans Parish;

La.—**Hall & Holland**, Montgomery, La., LB **$572,418**, (2 bidders), aggreg. type or soil cement base course 6.361 mi. Archie-Holloway Hy., Rte. 28. SP 74-04-04 & 74-03-06 FASP S-509(2), Catahoula and La Salle Parishes;

La.—**W. R. Aldrich & Co.**, Box 1751, Baton Rouge, La., LB **$1,182,613**, (2 bidders), c. conc. 0.639 mi. Lake Charles Expressway, Rte. 1-10. Sp 740-00-24 FASP 1-10-1(14)32, Calcasieu Parish. CD 2/7/61.

▲† **Warren Brothers Road Co.**, Box 577, Greenville, Miss., CA **$1,032,680**, articulated concrete MATTRESS CAST, Mississippi River, St. Francisville, Inv. 61-95, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans, La. CD 2/16/61, under LB.

▲ **KENTUCKY**—Commonwealth Ky., Dpt. Hys., Frankfort, ROAD,

W. C. Snider, 525 N. Maple, Danville, Ky. and **Wm. Hooper**, Box 288, Caneyville, Ky., CA **$1,208,242**, grade, drain and incid. surf. 5.043 mi. Proj. I-75-4(3)90 Madison Co. BA 2/17, CA 2/23. CD 2/23/61, under LB.

▲† **Al Johnson Constr. Co.**, 608 Foshay Tower, Minneapolis 2, Minn., and **Peter Kiewit Sons Co.**, 1024 Omaha National Bank Bldg., Omaha, Neb., CA

$19,888,888, DAM and LOCK EMERGENCY GATES, concrete dam consist. weir, sill, stilling basin, 13 concrete piers, etc. Captain Anthony Meldahl Locks and Dam, Ohio River, Bracken Co., Ky. about 1.7 mi. below Chilo, O., CIVENG 46-022-61-34, KENTUCKY and OHIO. U. S. Eng., 237 4 Ave., Huntington 18, W. Va. BA 2/16, CD 2/21/61, under LB.

▲† **Teco Supply Co., Inc.,** 711 Cooper N. W., Knoxville, Tenn., CA **$1,085,850,** CEMENT, Melton Hill Dam, TENNESSEE. Tennessee Valley Authority, New Sprankles Bldg., Knoxville, Tenn;
Signal Mountain Portland Cement Division, General Portland Cement Co., Volume Bldg., Chattanooga, Tenn., CA **$61,350,** CEMENT, Melton Hill Dam. (Tennessee),

BUILDINGS—LB & CA

▲ **Cafritz Co.,** 1625 I St. N. W., Wash., D. C., and **Charles H. Tompkins Co.,** 1737 K St. N. W., Wash., D. C., Owner Builds, **$7,000,000,** 572 unit high-rise River House South APARTMENT, S. Joyce St., ARLINGTON, VA. Edwin Weihe, 810 18th St. N. W., Wash., D. C., archt.

▲ **J. A. Jones Constr. Co.,** P. O. Box 13247, Station K, Atlanta, Ga., CA **$1,936,800,** MOTOR HOTEL, ATLANTA, GA. Atlanta Americana Motor Hotel, c/o Dr. Marvin Goldstein, 950 W. Peachtree St., NW, Atlanta, Ga., BA 2/8/61. CD 2/14/61, under LB.

▲ **General Bldrs. Corp. of Fort Lauderdale, Fla.,** 2100 South Ocean Lane, Fort Lauderdale, Fla., CA **$2,500,000.** Co-Op 170 units APARTMENT, 1950 South Ocean Dr., FORT LAUDERDALE, FLA. Atlantic Tower Corp., 2100 S. Ocean Line, Fort Lauderdale, Fla. C. F. McKirahan, 2400 E. Oakland Park Blvd., Fort Lauderdale, Fla., archt. D. E. Britt, Assocs., 1628 N. Federal Hy., Fort Lauderdale, Fla., engrs.

▲ **Clarwood, Inc.,** 1930 13th Ave. N., St. Petersburg, Fla., Owner Builds, **$4,000,000,** 5 story Pasadena Plaza APARTMENT, ST. PETERSBURG, FLA.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **O., Barberton**—BA 3/29—City, Municipal Bldg., Tuscarawas Ave., VIADUCT, over Wooster Rd. N., Wooster Rd. N. and Tuscarawas Ave. Imprvs. $1,500,000. Plans deposit $50. Beiswenger, Hock, Glaust & Verbede, 1006 Grant St., Akron, engrs. CD 7/29/59.

▲ **Mich., Grand Rapids**—BA 3/30—State Dpt. Aeronautics, State Capitol Bldg., Lansing, RUNWAY EXTENS., CONTROL TOWER, etc. Kent County Airport, Cascade Twp. Over $1,000,000. Plans deposit $25. CD 4/13/60, under Kent County Bd. of Aeronautics, as owner.

BUILDINGS—BA

▲ **Ind., New Albany**—BA 3/28—New Albany and Floyd Co. Building Auth., Courthouse, Spring and State Sts., Floyd County HOSPITAL ADDN., $3,950,985. Plans deposit $100. Extended date. Walker, Applegate, Oakes & Ritz, 218 Elsby Bldg., New Albany, archts. Southern Engineering, 322 W. Jefferson St., Louisville 2, Ky., mech. engr. CD 2/15/61.

BUILDINGS—SLC

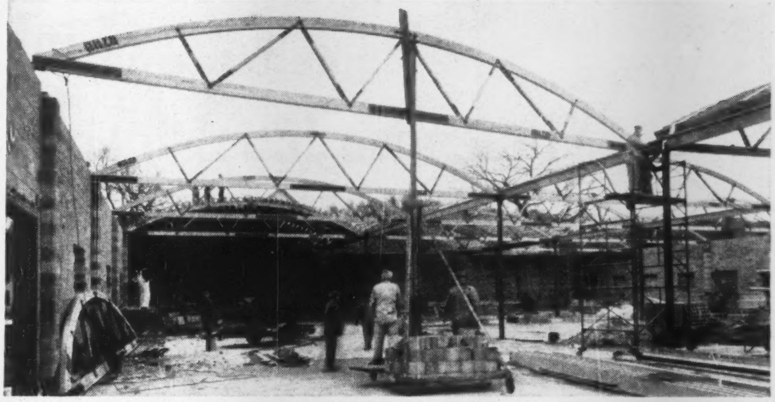
▲ **Ill., Chicago**—Jewish Home for the Aged, 1648 S. Albany Ave., soon lets contract HOME for the AGED ADDN. $1,000,000. Loewenberg & Loewenberg, 120 S. LaSalle St., Zone 3, Ill., archts.

▲ **O., Cincinnati**—BA 3/10—U. S. Post Office Dpt., Pennsylvania Ave. between 12th and 13th Sts. N. W., Wash., D. C., soon lets contract build and lease 3-6 story, brick, rein.-con. POST OFFICE ANNEX, incl. 300,000 sq. ft. postal operations, 34,000 ft. office, 30,000 sq. ft. garage, Liberty and Dalton St. $9,000,000. A. M. Kinney, Inc., 2912 Vernon Pl., archts. CD 1/10/61.

HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Depts. Bldg., Columbus, Zone 15, Bids opened 2/15, ROADS,
O.—**Arthur S. Langenderfer, Inc.,** 4690 Bancroft St., Toledo, O., LB **$698,629,** est. $884,700, (4 bidders), Type T 35 and structures 9.97 mi. State Rte. 66-(6.67, 13.69) 0.00, S 113(3) City of Defiance, Proj. No. 35, Defiance and Williams Counties;
O.—**Ferguson & Edmondson Co.,** 406 Keystone Bldg., Pittsburgh Pa., LB **$1,012,121,** est. $1,031,250, (4 bidders), Type T 35 on B 70 and structure 0.89 mi. State Rte. 7-17.33, U 431(13) City of Steubenville, Proj. 36, Jefferson Co.;
O.—**The A. Bentley & Sons Co.,** 201 Belmont Ave., Toledo, O., LB **$1,083,106,** est. $1,158,000, (7 bidders), Type T 71 and structures 0.588 mi. US Rte. 25-0.14, I 75-6(13) 200, City of Toledo, Proj. 37, Lucas Co.;
O.—**C. E. Wetherall Co.,** P. O. Box 1397, Huntington, W. Va., LB **$126,923,** est. $150,000, (4 bidders), Type T 35 on B 19 0.748 mi. State Rte. 218-2.41, State Rte. 553-0.00 State Rte. 790-3.74, Village of Crown City, Proj. 40, Gallia Co.;
O.—**J. & M. Bridge Co.,** 128 Richland Ave., Huron, O., LB **$272,779,** est. $351,900, (12 bidders), Type T 35 on B 19 and structures 1.06 mi. State Rte. 162-(1.50) (2.56) (2.67) (4.10) (11.87) (14.41) (16.93) (17.37), Proj. 41, Huron Co.;
O—**Vernon Nagel, Inc.,** Park Lane Dr., Napoleon, O., LB **$143,250,** est. $181,600, (6 bidders), Type T 35 on B 19 and structures 0.592 mi. State Rte. 34-(1,50) (2.80) (4.38) (7.17) Village of Edon, Proj. 43, Williams Co. CD 1/20/61.

▲ **Wander & Mason,** 1028 Properties St., Columbus, O., CA **$1,107,107,** SEWAGE PLANT IMPRVS., MAS-



Sears Roebuck Warehouse, Moline, Illinois, constructed with nineteen 42′ 3″ Rilco laminated wood bowstring trusses in tandem, spaced 24′ 6″ o.c. Contractor: Tunnicliff-MacDonald, Davenport, Iowa. Architect: M. R. Beckstrom, Moline, Illinois.

Contractor Saves up to $100 On Each Rilco Bowstring Truss

Savings of up to $100 on each Rilco prefabricated bowstring truss were reported by Carl Stephens, General Superintendent, Tunnicliff-MacDonald, Davenport, Iowa, contractor for the new Pioneer Warehouse, Moline, Illinois, leased by Sears Roebuck & Company.

Each Rilco truss was assembled by three men in 1½ hours. Comments Mr. Stephens: "We bought these trusses for approximately $100 less than completely assembled trusses. Our labor cost on assembly and erection for each truss was around $50. We feel there was a savings of $75-$100 each by using Rilco trusses."

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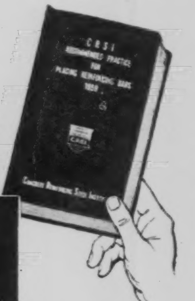
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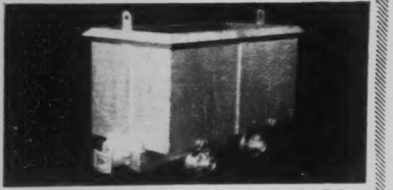

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SILLON, O. City, City Hall, Massillon, O. BA 1/25/61. CA 2/23/61. CD 2/3/61, under LB.

▲ **Kenny Constr. Co.**, 3220 Oakton St., Skokie, Ill., CA **$1,529,466**, RB 33, 80.85-60-130, Phase 2 UTILITIES, O'Hare Field, Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. BA 2/7/61. CA 2/21/61. CD 2/13/61, under LB.

BUILDINGS—LB & CA

▲ **Flair Builders, Inc.**, 5299 State Rd., Cleveland 34, O. Owner Builds, **$1,500,000**, 75 bi-level HOMES, BROOK PARK, O. William Dorsky, 11915 Shaker Blvd., Cleveland 20, O., archt.

▲ **Knowlton Constr. Co.**, 1133 W. Columbus Ave., Bellefontaine, O., CA Est. **$1,000,000**, 5 story, 224,000 sq. ft. 700 car self-parking GARAGE Front and Rich Sts., COLUMBUS, O. F & R. Lazarus & Co., Town and High Sts., Columbus, O., CD 8/26/60.

▲ **Edward Rose of Ohio, Inc.**, 2500 E. Dorothy Lane, Dayton, O., Owner Builds, **$1,140,000**, 57 HOMES, Crestgrove Plat, VANDALIA, O.

▲ **A. W. Burns & Sons** Constr. Co., 424 Woodland St., Columbus, O., Owner Builds **$1,500,000**, 200 HOMES, northeast side, WESTERVILLE, O.

▲ **Theodore Bogner & Sons, Inc.**, W. Mulberry St., Wooster, O., CA Est. **$1,300,000**, 124,000 sq. ft. FACTORY, OFFICE, Rte. 5, WOOSTER, O. Rubbermaid, Inc., 1205 E. Bowman St., Wooster, O. CD 9/9/60.

▲ **Crane Constr. Co.**, 201 E. Walton Pl., Chicago, Ill., CA **$4,000,000**, APARTMENT, SERVICE SHOPS, CHICAGO, ILL. Oglesby Towers Corp., 6700 S. Oglesby Ave., Chicago, Ill.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲ **Tex., Dallas**—BA 3/20—City, City Hall, White Rock SEWAGE TREATMENT PLANT and ADMIN. BLDG. ADDN., on Sargent Rd. $2,300,000. Extended date. CD 2/23/61.

▲† **Tex., Lackland Air Force Base**—BA 3/28—U.S. Eng., Box 1129, Galveston, RECRUIT TRAINING and HOUSING BLDGS., and HEADQUARTERS SQUADRON BLDG. at Lackland Air Force Base, ENG-41-243-61-22. $1,500,000. CD 2/21/61.

▲† **Minnesota**—BA About 4/4—U. S. Eng., 1217 U. S. Post Office and Custom House; St. Paul, Zone 1, Upper Pool DREDGING, St. Anthony Falls Proj., Mississippi River, CIVENG-21-018-61-25. Approx. $1,000,000. Plans deposit $1. CD 9/21/60.

▲† **Missouri**—BA 4/6—U. S. Eng., 420 Locust St., St. Louis, Zone 2, five PUMPING STATIONS and SEWER ALTERS., Proj. Items P-4 and S-4 Flood Protection, incl. pumping units, 9,000 lin. ft. rein.-con. pipe 24- to 60-in. etc. St. Louis. $3,500,000. Sverdrup & Parcel, Inc., 915 Olive St., St. Louis, Zone 1, engr. CD 9/21/60.

▲† **Montana**—BA 4/11—Bureau Reclamation, Dpt. Interior, New High School Gymnasium, Hardin, Mont., YELLOWTAIL DAM and POWERPLANT, incl. arch-type concrete dam approx. 520 ft. high and approx. 1,450 ft. long at crest; 28 ft. concrete-lined diversion tunnel approx. 860 ft. long, spillway consisting of inlet channel, intake structure, concrete-lined 32 ft. diameter tunnel, and stilling basin; powerplant and outlet structures at foot of dam to accommodate four 50,000 kilowatt generating units driven by 70,000 horsepower hydraulic turbines, Yellowtail Unit, Montana-Wyoming Lower Bighorn Division Missouri River Basin Project, 45 mi. southwest Hardin, Bighorn Co., Spec. No. DC-5525. CD 9/15/60.

BUILDINGS—BA

▲† **Mont., Glasgow** — BA On Or About 3/28 — Base Procurement Office, P. O. Box 5000, Glasgow Air Force Base, Mont., 200 units Capehart HOUSING Glasgow Air Force Base, No. 3, Bids No. 24-607-61-40. $3,300,000. Plans deposit $100. CD 4/27/59.

HEAVY CONSTRUCTION—LB & CA

▲ **Lametti & Sons**, 211 N. Pascal St., St. Paul, Minn., LB **$943,265**, (6 bidders), 59 lin. ft. SANITARY SEWER and 73,000 ft. WATER MAIN; LB **$657,157**, (9 bidders), Section J-2, 42,000 lin. ft. SANITARY SEWER LINE, and 50,000 ft. WATER MAIN; LB **$1,008,030**, (5 bidders), Tied, Section J-1, 66,000 ft. WATER MAIN and 42,000 ft. SEWER, BLOOMINGTON (P.O. MINNEAPOLIS), MINN. City, 10200 Penn Ave. S., Bloomington, Minn. BA 2/17. CD 2/1/61.

▲† **Philips & Davies, Inc.**, P. O. Box 231, Kenton, O., LB **$1,962,884**, est. $3,000,000, (17 bidders), BULKHEAD GATES, intake service gates, draft tube gates, frames and guides, Big Bend Dam, ENG-25-066-61-73, Fort Thompson, SOUTH DAKOTA. U. S. Eng., 215 N. 17th St., Omaha 2, Neb. BA 2/24/61. CD 1/6/61.

▲† **Bushman Constr. Co.**, Schneider Bldg., Saint Joseph, Mo., CA **$1,935,853**, Missouri River Basin Proj., EARTHWORK STRUCTURES, for Farwell Main Canal, Loup City, DC 5467, Loup City and Saint Paul, NEBRASKA. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. BA 2/9/61, CA 2/20/61. CD 2/13/61, under LB.

▲ **TEXAS**—State Hy. Comn., Austin, ROADS

Tex.—**Allen Keller**, Fredricksberg, Tex., CA **$984,794**, grading, strs., base and surf., Hwy US 281 and 290, F 244(5) etc., Blanco Co.;

Tex.—**Cooper & Woodruff**, 1492 W. 8th St., Amarillo, Tex., CA **$783,880**, grading, strs., base and surf., 19.995 mi. Hwy. U.S. 83, S 718(3), Cottle Co. BA 2/18/61. CD 2/24/61, under LB.

(Continued on page 102)

Advertisement

101 Buildings Studied

Hope-Witheron Building, San Diego
Towne House, Harrisburg, Pa.
Thomas Jefferson Bldg., St. Louis
Plaza Apartment Bldg. No. 10, St. Louis
Plaza Apartment Bldg. No. 20, St. Louis
Plaza Apartment Bldg. No. 30, St. Louis
Plaza Apartment Bldg. No. 40, St. Louis
Plaza Apartment Bldg. No. 50, St. Louis
Plaza Apartment Bldg. No. 60, St. Louis
1221 Minor Building, Seattle
Manhattan Bldg., Seattle
Logan Bldg., Seattle
Mark 51 Bldg., Seattle
Carlton House, Shaker Heights, Ohio
Broadway & Austin Bldg., San Antonio
215 N. Flores Bldg., San Antonio
Bayview Office Bldg. Addn., Ft. Lauderdale
Versailles Apartments, Ft. Lauderdale, Fla.
Birch Towers, Ft. Lauderdale
Breakwater Towers, Ft. Lauderdale
Massachusetts Blue Cross, Boston
Crimson Associates Bldg., Cambridge, Mass.
Babson Bldg., Boston
University Towers, New Haven
Woodland Medical Center, Hartford, Conn.
Strawberry Hill Terrace, Stamford, Conn.
1720 West End Bldg., Nashville
Park Towers, Baltimore
Hood-Hall Bldg., Dallas
Continental Apartments, Dallas
Empire Bldg., Salt Lake City
Dunleith Manor, Kansas City, Mo.
Quality Hill Towers Bldg., 910 Kansas City, Mo.
Old Security Life Ins. Bldg., Kansas City, Mo.
Fidelity Bldg., Indianapolis
Grain Dealers Mutual Ins. Co., Indianapolis
St. Paul Fire & Marine Insurance Co., St. Paul
Cheeseman Towers Apartments, Denver
777 Grant Bldg., Denver
Bankers Union Life Bldg., Denver
1710 "H" Street, Washington
1901 Pennsylvania Ave., Washington
Mercury Bldg., Washington
Premier Bldg., Washington
R. C. A. Bldg., Washington
Bender Bldg., Washington
Potomac Towers, Arlington, Va.
3900 Watson Place, Bldg. A., Washington
3900 Watson Place, Bldg. B., Washington
Railway Labor Building, Washington
City Bldg., Washington
Whispering Waters, St. Petersburg, Fla.
Union Bank Bldg., Beverly Hills, Calif.
Independence Life Insurance Bldg., Pasadena
Cornelius Plaza, Portland, Ore.
Park Vista, Portland, Ore.
Bernard Horn Bldg., Cincinnati
2300 Luray Bldg., Cincinnati
Liberty Mutual Ins. Bldg., Boston
Cornet Bldg., Clayton, Mo.
Maylee Bldg., Cleveland Heights
National Cash Register Bldg., Cleveland
The Diplomat, Shaker Heights, Ohio
1674 Meridian Bldg., Miami Beach
1919 Bay Drive Bldg., Miami Beach
Southgate Towers, Miami Beach
Hartford Federal Savings & Loan,
 Hartford, Conn.
Gateway Center No. 4, Pittsburgh
Medical Center Office Bldg., Pittsburgh
Blue Cross Bldg., Dallas
Vaughn Bldg., Dallas
Presidential Apartments, Chicago
Calhoun Terrace Apartments, Minneapolis
Imperial Apartment Hotel, Denver
Park Adams, North Arlington, Va.
First Federal Savings & Loan, St. Petersburg
Western Geophysical Bldg., Los Angeles
Signal Oil Bldg., Los Angeles
California Bank Bldg., Los Angeles
Pacific Fidelity Life Insurance, Los Angeles
Ohio River Vista Apartments, Cincinnati
411 Oak Bldg., Cincinnati
Winebrenner Haven, Findlay, Ohio
College Terrace, Brooklyn
45 E. 72nd St., New York
Bankers Trust Bldg., New York City
201 E. 15th St., New York City
The Park East, New York City
IBM Bldg., Detroit
1st Ave. & 56th St., New York City
1733-49 E. 12th St., Brooklyn
Ocean Towers, Brooklyn
Ocean Terrace, Brooklyn
345 Webster Ave., Brooklyn
American Field Service Bldg., New York City
140 E. 44th St., New York City
165 E. 72nd St., New York City
Fieldstone Dale, New York City
Bolton Manor, New York City
300 E. 51st St., New York City
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Conclusions? Draw your own.

Study Specifications:

All building foundations were begun after Jan. 1, 1958. All buildings were occupied before Nov. 30, 1960. Buildings ranged in height from 4 to 21 stories. (59 from 4 to 9 stories, 29 from 10 to 15 stories and 13 from 16 to 21 stories.) Office and apartment buildings, selected at random and located in all parts of the country, were studied by impartial construction survey specialists. None of the projects involved abnormal delays beyond the control of the contractor.

For more details on this study, write to American Bridge Division, U. S. Steel, Room 1801M, 525 William Penn Place, Pittsburgh 30, Pa.

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(Continued from page 100)

▲† **Robert E. McKee, Gen. Constr., Inc.**, Box 1706 Santa Fe., N. M., CA **$1,617,300**, Type 2, AIR ROUTE TRAFFIC CONTROL CENTER, ALBUQUERQUE, N. M. Fed. Aviation Agency, Box 90007, Airport Station, Los Angeles, Calif. BA 2/1/61. CD 2/15/61, under LB.

▲ **Longenbaugh & Coe, Inc.**, 524 Montano Rd., Albuquerque, N. M., CA **$2,250,000**, WATER SYSTEM IMPRVS., EXTENSIONS, CARLSBAD, N. M. City, City Hall, Carlsbad, N. M. Arthur B. Chafetz, Box 909, Carlsbad, N. M., engrs. CD 12/7/60.

BUILDINGS—LB & CA

▲ **Lovejoy Constr. Co.**, 1118 Mulberry St., Des Moines, Iowa, CA Est. **$1,000,000**, 1 story, 110,000 sq. ft. MFG. PLANT, 400 ft. tunnel kiln, GRIMES, IOWA; Goodwin Companies, 614 Central National Bldg., Des Moines, Iowa, and 513 Foshay Tower, Minneapolis, Minn. Dwight B. Hendry & Assocs., 6621 Darlington Rd., Pittsburgh, Pa., engrs.

▲ **Humble Oil & Refining Co.**, 1216 Main St., Houston, Tex., Owner Builds, **$2,800,000**, BENZENE PLANT ENLARGEMENT, BAYTOWN, TEX. CD 1/12/61.

▲ **M. W. Kellogg Co.**, M. Espersón Bldg., Houston, Tex., CA Est., **$16,000,000** 2nd. phase high-purity ethylene PLANT, BEAUMONT, TEX. Magnolia Petroleum Co., subsidiary, Socony Mobil Oil Co., Mobil Bldg., Dallas, Tex. CD 8/5/59.

▲ **Knighton-Cox Constr. Co.**, 11067 Dennis Rd., Dallas, Tex., Owner Builds, **$2,500,000**, 135 bed MEDICAL CENTER, east of Webb Chapel Rd., FARMERS BRANCH, TEX. Fisher & Jarvis, 725 Southland Center, Dallas, Tex., archts.

▲ **Kirkgard Constr. Co.**, 8016 Meadowbrook St., Houston Tex., CA Est. **$1,250,000**, 210-unit APARTMENT, Gulf Freeway at Winkler Drive, HOUSTON, TEX. L. W. Helms, 5568 Lynbrook St., Houston, Tex.

▲ **W. H. Hunt**, 1739 Fordham St., Dallas, Tex., Owner Builds, **$1,380,000**, first year $750,000, 1½ years to complete 115 DWELLINGS, Phase 1, PLANO, TEX. CD 11/14/60.

▲ **Peter Kiewit Sons' Co.**, P. O. Box 8787, University Park Station, Denver, Colo., CA Approx. **$2,000,000**, PLANT STORAGE FACILITIES, TRIDENT, MONT. Ideal Cement Co., Denver National Bldg., Denver, Colo. CD 9/10/59.

FAR WEST

BUILDINGS—BA

▲ **Calif., Fresno**—BA 3/22—Housing Auth. of Fresno Co., c/o Exec. Dir., 2520 E. Clinton Ave., 40 unit HOUSING and ADMINISTRATION and MAINTENANCE BLDG., Firebaugh. $1,148,000. John P. Miller, 1910 Fresno St., archt. CD 5/10/60.

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—State Hy. Dpt., Boise, ROAD,
Max J. Kuney, N. 120th Ralph St., Spokane, Wash., CA **$1,048,854**, detours, grading, draining, five concrete, 1 timber bridges, railroad relocation 5.7 mi. Interstate 90 between Wallace and Mullan, Shoshone Co. BA 1/24/61, CA 2/23/61. CD 1/30/61, under LB.

▲ **IDAHO**—Dpt. Hys., 603 Main St., Boise, Bids opened 2/21, ROAD,
Earl L. McNutt Co., Boise, Idaho, LB **$1,431,583**, (5 bidders) grading, 4-lane divided roadway, drainage one grade separation, one interchange, four concrete bridges 7.841 mi. Interstate 15 starting 3.5 mi. northeast of Blackfoot, Bingham Co., Proj. I 15-2 (7)96. CD 2/2/61.

▲† **A & B Constr. Co.**, Box 554, Helena, Mont., LB **$1,327,594**, est. $1,274,758 (7 bidders), EARTHWORK, CONCRETE LINING, STRUCTURES, Stanaker Service Canal, Central Utah Proj., Spec. DC 5464, UTAH. Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo. BA 2/21. CD 2/1/61.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 2/23, ROAD,
Granite Constr. Co., P.O. Box 900, Watsonville, Calif., LB **$3,460,487**, (5 bidders), 3.5 mi. six-lane freeway US Hy. 50 between 0.7 mi. west of Citrus Rd. and 1.1 mi. east of Alder Creek about 12 mi. east of Sacramento, Sacramento Co. CD 1/13/61.

▲ **CALIFORNIA**—State Div. Hys., 120 S. Spring St., Los Angeles, ROAD,
Matich Constructors, P.O. Box 390, Colton, Calif. and **W. F. Maxwell**, P.O. Box 356, Fontana, Calif., CA **$6,839,180**, grading, paving to constr. 5.8 mi. six-lane freeway US Hy. 70-99, incl. 11 bridges between jct. Riverside Freeway south of San Bernardino and Colton Ave., Redlands, San Bernardino Co. BA 2/2. CD 2/8/61, under LB.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, Bids opened 2/23, ROAD,
Peter Kiewit Sons' Co., 442 Post St., San Francisco, Calif., LB **$4,020,820**, (5 bidders), 1.7 mi. eight-lane freeway on MacArthur Freeway (US Hy. 50) between 0.3 mi. west of Grand Ave. and 14 Ave. in Oakland, Alameda Co. CD 1/18/61.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento, ROAD,
R. A. Westbrook, Inc. and Morrison-Knudsen Co. Inc., 6431 Elvas Ave., Sacramento, Calif., CA **$5,744,593**, grading, paving to constr. 9.7 mi. 6 lane freeway on US Hy. 99 between 0.4 mi. southeast of Highland Ave. near Selma and 0.3 mi. northwest of Chestnut Ave. near Malaga, Fresno Co. BA 2/15, CA 2/24, CD 2/17/61 under LB.

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▲ **Guy F. Atkinson Co.**, Box 259, Long Beach, Calif., LB **$1,347,000**, WHARF and BERTHS 90, 91, 92, San Pedro, LOS ANGELES, CALIF. Los Angeles Harbor Dpt., City Hall, Los Angeles, Calif. CD 9/8/58.

▲ **MacDonald & Kruse Constr. Co.**, P. O. Box 398, Montrose, Calif., LB **$5,132,790**, (9 bidders), Proj. No. 9, Third Unit, Los Cerritos STORM DRAIN to serve sections Lakewood, Bellflower and Long Beach, lines A, B, C and D, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. BA 2/17. CD 1/11/61.

▲† **The Jordan Co.**, P. O. Box 1179, Columbus, Ga., CA **$2,085,782**, WHERRY HOUSING, REHABILITATION, IMPRVS., to IFB 04-626-61-37, TRAVIS AIR FORCE BASE, CALIF. Base Procurement Office, Travis Air Force Base, Calif. BA 1/10, CA 2/24. CD 2/16/61, under LB.

▲ **Hawaii—Kai**, 2005 Kalia Rd., Honolulu, Hawaii, CA **$3,000,000**, Hawaii-Kai SEWERAGE SYS., HONOLULU, HAWAII. Henry J. Kaiser, 2005 Kalia Rd., Honolulu, Hawaii. CD 4/16/59, under Commercial Buildings.

BUILDINGS—LB & CA

▲ **Singleton Constr. Co.**, Shasta and East Sts., Redding, Calif., LB **$1,267,904**, (5 bidders), general contract 2 story rein.-con. brick EDUCATION PSYCHOLOGY BLDG., 3 story, bsmnt. LIBRARY, 2 story wood frame FORESTRY CLASSROOM, Humboldt State College, ARCATA, CALIF. State Div. Architecture, 1120 N St., Sacramento, Calif. BA 2/21. CD 1/20/61.

▲ **General Constr. Co.**, Box 3845, Seattle, Wash., CA **$2,023,320**, 140 x 220 ft., rein.-con. EXHIBIT-BANQUET HALL, rein.-con. THEATER, SEATTLE, WASH. City, County City Bldg., Seattle, Wash. BA 2/15/61, CA 2/23/61. CD 2/20/61, under LB.

▲ **Hobler Enterprises**, 4847 N. Cedar St., Fresno, Calif., Owner Builds, **$1,200,000**, 40,000 sq. ft. Golden Bowl BOWLING STADIUM for National League Bowling, Tennis, Basketball Conventions, FRESNO, CALIF. AAA Engineering & Drafting Co., 1636 N. Cedar Ave., Fresno, Calif., engrs.

▲ **Grand Land Co.**, 16901 S. Western Ave., Gardena, Calif., Owner Builds, **$1,095,190**, 71 stucco DWELLINGS, Hoover St., Merrit Ave. and 173 Pl., Tract 25307, GARDENA, CALIF.

▲ **A. Gindling**, 6303 Wilshire Blvd., Los Angeles, Calif., Owner Builds, **$1,250,000**, 114 frame, stucco DWELLINGS, HUNTINGTON BEACH, CALIF. Southwest Drafting Service, 2902 W. Florence Ave., Los Angeles, Calif., archts.

▲ **Linda House & Garden, Inc.**, 2901 Benedict Canyon Dr., Beverly Hills, Calif., CA **$1,143,724**, 76 frame, stucco DWELLINGS, HUNTINGTON BEACH, CALIF. Linda Granada, Inc., 2901 Benedict Canyon Dr., Beverly Hills, Calif.

▲ **Luxury Homes, Inc.**, 905 Euclid, Anaheim, Calif., CA **$1,024,404**, 56 frame, stucco DWELLINGS, HUNTINGTON BEACH, CALIF. Pluvisus, Inc., 905 N. Euclid, Anaheim, Calif.

▲ **Luxury Homes, Inc.**, 905 N. Euclid, Anaheim, Calif., CA **$1,191,680**, 95 frame, stucco DWELLINGS, HUNTINGTON BEACH, CALIF. Arturuis, Inc., 905 N. Euclid, Anaheim, Calif.

▲ **S. Jon Kreedman**, 9350 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, **$1,740,000** concrete MEDICAL CENTER, 3756 Santa Rosalia Dr., LOS ANGELES, CALIF. Sydney Eisenshtat, 1145 S. Beverly Dr., Beverly Hills, Calif., archt. Mackintosh & Mackintosh, 306 N. Vermont, Los Angeles 4, Calif., engrs.

▲ **Wayne Pendergraft, Inc.**, P.O. Box 296, Saratoga, Calif., LB **$1,167,198** (6 bidders), concrete, wood frame Samuel Curtis Rogers JUNIOR HIGH SCHOOL, SAN JOSE, CALIF. Moreland School Dist., 4610 Strawberry Park Dr., San Jose, Calif. BA 2/23. CD 2/10/61.

▲ **Theo G. Meyer & Sons**, Quint and Custer Sts., San Francisco, Calif., CA **$7,570,854** ten major bldgs San Mateo JUNIOR COLLEGE, College Heights Campus, SAN MATEO, CALIF. San Mateo Junior College Dist., Coyote Point Campus, San Mateo, Calif. BA 2/21. CD 2/10/61.

▲ **Diversiled Builders, Inc., and Kaiser Steel Co.**, 6855 Rosecrans Ave., Paramount, Calif., LB **$1,500,000**, HIGH ALTITUDE ENVIRONMENTAL BLDG., SAUGUS, CALIF. Lockheed Aircraft Co., 2555 N. Hollywood Way, Burbank, Calif. Johnson & Johnson, 5441 E. Beverly Blvd., Los Angeles, Calif., archts. CD 2/24/59.

▲ **Larwin Co.**, 8670 Wilshire Blvd., Beverly Hills, Calif., Owner Builds, **$1,090,000**, 111 frame, stucco DWELLINGS, Tract 1165, SIMI, CALIF.

▲ **Steed Bros. Constr. Co.**, 714 Date Ave., Alhambra, Calif., CA **$3,229,300**, 4 story HOSPITAL, WEST COVINA, CALIF. Queen of the Valley Hospital Corp. for Sisters of the Immaculate Heart of Mary, 1613 W. Merced Ave., West Covina, Calif. Gene Verge & R. N. Clatworthy, 4342 Eagle Rock Blvd., Los Angeles, Calif., archts. BA 1/27, CA 2/21, CD 5/6/60.

▲ **R. A. Watt**, 16901 S. Western Ave., Gardena, Calif., CA **$3,016,023**, 245 DWELLINGS, Tract 2506, WESTMINSTER, CALIF. Caroldale, Inc., 16901 S. Western Ave., Gardena, Calif.

▲ **United Constr. Co.**, 645 Ahua St., Honolulu, Hawaii, CA **$1,500,000**, steel, concrete BAKERY, WAIMALU, HAWAII. Snowflake Bakery (Holsum Hawaii Bakers), 1085 S. Beretania St., Honolulu, Hawaii. Lemmon, Freeth, Haines & Jones, 1410 Kapiolani Blvd., Honolulu, Hawaii, archts. CA 2/13. CD 8/15/60.

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CANADA

HEAVY CONSTRUCTION—BA

▲ **Ont., Toronto**—BA 3/22—Dpt. P. Wks., Hunter Bldg., Ottawa, HARBOR WORK, incl. dredging, ship channel and turning basin marginal way and eastern entrance, $1,750,000.

HEAVY CONSTRUCTION—LB & CA

▲ **ONTARIO**—Dpt. Hys., Parliament Bldg., Downsview, Bids opened 2/22, BRIDGE,

Runnymede Steel Constr. Ltd., 3370 Dundas St. W., Toronto, Ont., LB **$3,379,500**, (7 bidders), center superstructure of Homer 6-lane high level bridge, over Welland Canal, (Contract 60-294) Homer. CD 2/10/61.

▲ **Foundation Co. of Canada Ltd.**, 1900 Sherbrooke St. W., Montreal, Que., CA **$3,381,011**, reconstr. LONG WHARF outlined by thirteen rein.-con. cribs, each 107x48x54 ft. on which rein.-con. cope wall 18 ft. high will be built, SAINT JOHN, N. B. National Harbours Bd., Rm. 720, Hunter Bldg., Ottawa, Ont. CA 2/2/61. CD 1/12/61, under LB.

BUILDINGS—LB & CA

▲ **Humber Ridge Apartments Ltd.**, c/o John H. Daniels, archt 166 Wilson Ave., Toronto, Ont., Owner Builds, $1,500,000, APARTMENT, Weston Rd. near Finch Ave., TORONTO, ONT.

▲ **C. Jobin Ltee**, 1100 Ave. Vincent-Massey, Quebec City, Que., CA Est. **$2,000,000**, **HOTEL reconstruction and extension**, St. Jean St., Quebec City, Que. Hotel Victoria, Inc., 1100 St. Jean St., Quebec City, Que. CD 11/9/60.

▲ **Dominion Textile Co., Ltd.**, 1950 Sherbrooke St. W., Montreal, Que., Owner Builds, **$4,000,000**, modernizing TEXTILE MILL, Montmorency Falls, ST. GREGOIRE DE MONTMORENCY, QUE.

LATIN AMERICA

HEAVY CONSTRUCTION—BA

▲ **ARGENTINA** — BA 4/3 — National Highway Bureau (Direccion Nacional de Vialidad), Buenos Aires, ROADS,

Hy. 18, Segment Parana-Sal.Salvador and access routes to Concordia, $7,277,228.

Hy. 126, segment, jct. Hy. 127 La Paz (Prov. of Entre Rios), $5,361,445.

HEAVY CONSTRUCTION—LB & CA

▲ **EL SALVADOR**—Ministry of P. Wks., Republic of El Salvador, San Salvador, Bids opened 1/6, ROADS,

El Salvador—**J. Fonseca y Compania**, San Salvador, CA **$993,378** section feed road to Littoral Hy.;

El Salvador—**Laycos S. A.**, San Salvador, CA **$1,120,600** section feeder road. CD 12/19/60.

BUILDINGS—LB & CA

▲ **Fluor Corp. Ltd., 2500 S. Atlantic Blvd., Los Angeles 22, Calif., U.S.A.**, CA Est. **$1,000,000, design and** construct 6,659 bbl. per day CRUDE UNIT and facilities, CONCHAN, PERU. **Refineria Conchan-California S.A.** (Standard Oil of California, 225 Bush St., San Francisco, Calif., U.S.A.).

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

▲ **Miramar Constr. Co.**, P.O. Box 2889, San Juan, Puerto Rico, CA **$2,286,000**, SITE IMPRVS., streets, steam tubing for State Medical Center, RIO PIEDRAS, PUERTO RICO. Puerto Rico Dpt. of Health, Stop 20, San Juan, Puerto Rico. BA 1/25. CD 12/20/60.

AMERICANS ABROAD

BUILDINGS—LB & CA

▲ **M. W. Kellogg Co., 711 Third Ave.**, New York, N. Y., U.S.A., CA 37,800 b/d REFINERY, Port Noarlunga, near ADELAIDE, AUSTRALIA. Standard-Vacuum Oil Co., 1000 Westchester Ave., White Plains, N. Y., U.S.A.

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Mozambique**—BA 4/4—Mozambique Dpt. P. Wks. and Transport Services, Lourenco Marques, BRIDGE,

bridge and highways, National Hy. No. 1 linking Lourenco Marques with Vila de Joao, incl. 210 meter bridge over Limpopo River, bridge over Chicumbane River and five culverts. $2,300,000. Plans deposit $45.11.

HEAVY CONSTRUCTION—LB & CA

▲ **Richards Costain Ltd.**, 111 Westminster Bridge Rd., London SE 1, England, CA Est. **$6,720,000**, Balderhead RESERVOIR, 3,000 lin. ft. dam embankment, ENGLAND. Tees Valley & Cleveland Water Board, c/o **Sandeman, Edward, Kennard & Partners, engrs., 171** Victoria St. SW 1, London, England.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Tex., Wylie**—North Texas Municipal Water Dist., Lavon Lake WATER STORAGE EXPANSION, $3,000,000; WATER PIPE LINE MAIN, channelwater to Lavon, **$1,000,000**. Forrest & Cotton, Vaughn Bldg., Dallas, consult. engrs. Bids late 1961.

SEWERS, WASTE DISPOSAL

▲ **Alta., Edmonton**—City, City Hall, trunk SEWER LINE, serve 55 sections southwest area, run from 61st Ave. and 105th St. to 54th Ave. and 122nd St. $1,300,000.

▲ **Md., Annapolis**—City, City Hall, STORM DRAINAGE SYSTEM. **$3,154,000**. To go ahead in 1962.

▲ **Mo., Cape Girardeau**—City, City Hall, defeated $1,598,000 bonds Feb. 14, SEWAGE DISPOSAL and TREATMENT PROJ., incl. 4 pumping stations, interceptor and outfall sewers and sewage treatment plant. **$1,848,000**. CD 12/21/60.

▲ **Pa., Latrobe**—Boro, Boro Hall, SANITARY SEWERAGE SYSTEM, **$3,044,435**. To go ahead 1961. CD 1/20/47.

▲ **Pa., Southampton** — Upper Southampton Sewer Authority, SEWERAGE SYSTEM, Upper Southampton Twp. **$3,700,000**. Gannett, Fleming, Corddry & Carpenter, Inc., 600 N. 2nd St., Harrisburg, consult. engr. Bids in Fall.

▲ **Ont., Belleville**—City, City Hall, SEWAGE DISPOSAL SYSTEM, **$4,500,000**. Gore & Storrie Ltd., 1130 Bay St., Toronto, consult. engrs.

STREETS AND ROADS

▲ **NEVADA**—Nevada Hy. Dpt., Carson City, ROADS,

Clark Co.—21 mi. of Inter-state Freeway 15 east of Las Vegas, **$4,700,000**.

Pershing Co.—25.2 mi. highway Inter-state Rte. 80, west of Lovelock, **$3,900,000**.

Washoe Co.—11.9 mi. Inter-state Freeway 80, west of Wadsworth, **$5,400,000**.

AIRPORTS

▲ **Ky., Covington**—Kenton County Airport Bd., Court House, plans by Howard Elliston, 706 Walnut St., Cincinnati, O., west wing TERMINAL ADDN., **$6,500,000**; runway and taxiway extension, **$3,500,000**; concourses and ramp imprvs., **$1,700,000**, Greater Cincinnati Airport. Hall, McAllister & Stockwell, 706 Walnut St., Cincinnati, O., consult. engrs. CD 2/12/58, under Ky., Erlanger.

UNCLASSIFIED

▲ **Michigan**—American Louisiana Pipe Line Co., 500 Griswold St., Detroit, Zone 26, GAS TRANSMISSION LINE EXTENSIONS. **$4,000,000**.

▲ **Michigan**—Buckeye Pipe Line Co., Dixie Hy and Buckeye Rd., Lima, O.. 42 mi. TRANSMISSION LINES

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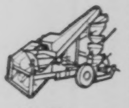
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EXTENSION from Flint to Bay City, Genesee and Bay Counties. **$1,700,000.** Constr. 1961.

▲ **Michigan**—Consumers Power Co., Jackson, Mich., 238 mi. GAS TRANSMISSION LINES from Mount Clemens to Plymouth, Farmington, Bloomfield, Southfield and Erin Twps.; expansion of gas production and pumping facilities at Northville. **$12,000,000.** CD 12/17/57.

▲ **Michigan**—Michigan Consolidated Gas Co., 415 Clifford St., Detroit, Zone 26, 36 in. diam. steel GAS TRANSMISSION LINE, Van Born Rd. from Willow Run Receiving Station to River Rouge Station, Melvindale, **$2,055,000;** relocation GAS MAINS along Expressways in Detroit, **$1,556,000.** Constr. 1961. CD 3/19/56.

▲ **Michigan** — Michigan-Wisconsin Pipe Line Co., 500 Griswold St., Detroit, Zone 26, GAS TRANSMISSION LINES. **$2,000,000.** Contr. 1961.

PUBLIC BUILDINGS

▲ **Ala., Mobile**—Mobile Co. Bd. Revenue, Courthouse, plans by T. Cooper Antwerp, 354 St. Francis St., Mobile, and Gordon A. Friese Assocs., Inc., 1145 19th St. N.W., Wash., D. C., 300-bed HOSPITAL. **$6,000,000.** Moulton Eng. Co., foot of Hurtel St., consult. engr. George Hamlin, 55½ N. Royal St., mech. engr. CD 7/25/58.

▲ **Ala., Mobile**—Mobile Infirmary, Louiselle St., plans by Platt Roberts & Co., Merchants National Bank Bldg., HOSPITAL ADDN. **$2,000,000.** Hamlin & Duepress, 55½ N. Royal, mech. engrs. CD 8/1/60.

▲ **Ark., Fort Smith**—City, City Hall, plans by E. Chester Nelson & Assocs., Merchants National Bank Bldg., MUNICIPAL AUDITORIUM. **$1,500,000.** CD 8/25/60.

▲ **Calif., Berkeley**—Regents of University of California, 2 Barrow Lane, plans by De Mars, Esherick & Olsen, 2065 Powell, San Francisco. COLLEGE OF ENVIRONMENTAL DESIGN. **$4,500,000.**

▲ **Calif., Cypress**—Oak Grove Elementary School Dist., 85 Cottle Rd., voted **$3,000,000** bonds Feb. 14 and request **$12,000,000** State Aid, SCHOOLS.

▲ **Calif., Daly City**—Jefferson Elementary School Dist., 48 Park Plaza, voted **$2,800,000** bonds Feb. 7 and State Aid Loan **$7,000,000,** SCHOOLS.

▲ **Calif., Lafayette**—Acalanes Union High School Dist., 1212 Pleasant Hill Rd., voted **$3,900,000** bonds Feb. 14, and **$750,000** State Aid, SCHOOLS. CD 12/5/60.

▲ **Calif., La Puente**—La Puente Union High School Dist., 350 N. Hacienda Blvd., plans by Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, Nogales HIGH SCHOOL. **$1,700,000.** CD 4/14/60.

▲ **Calif., Monterey**—Monterey Union High School Dist., P.O. Box 1031, plans by Keeble & Rhoda, 135 Webster St., Second HIGH SCHOOL, SWIMMING POOL. **$2,250,000.**

▲ **Calif., Norwalk**—Excelsior Union High School Dist., 17923 S. Pioneer Blvd., Artesia, plans by Kistner, Wright & Wright, 1125 W. 6th St., Los Angeles, HIGH SCHOOL 5. **$1,750,000.** CD 2/26/60.

▲ **Calif., Oakland**—Housing Auth. of Oakland, 935 Union St., plans by Confer, Willis & Anderson; Warnecke & Warnecke; Edward Cerruti; Treichel & Gibbs, 336 40th St., Oakland, Peralta Villa Annex, 108 unit PUBLIC HOUSING, West Grand Ave., Chestnut and Linden Sts. **$1,484,655.** CD. 12/19/51.

▲ **Calif., San Jose**—Franklin-McKinley Elementary School Dist., 400 Tully Rd., voted **$1,000,000** bonds and request **$3,500,000** State Aid, SCHOOLS.

▲ **Calif., Santa Clara**—Jefferson Elementary School Dist., 1201 Lawrence St., voted **$2,500,000** bonds Feb. 14 and request **$9,500,000** State Aid, SCHOOLS.

▲ **Calif., Santa Clara**—Santa Clara Union High School Dist., 1000 Market St., voted **$7,000,000** bonds Feb. 14 and **$2,500,000** State Funds, SCHOOLS.

▲ **Colo., Aurora**—School Dist. 28J, Adams and Arapahoe Counties, 11th and Peoria, **$3,033,000** bond election May 1, SCHOOLS.

▲ **Conn., Fairfield**—Town, Town Hall, approved referendum Feb. 15, convert Mill Plain Elementary School into HIGH SCHOOL. **$2,875,000.** Lyons & Mather, 211 State St., Bridgeport, archts. CD 2/15/60.

▲ **Del., Newark**—Newark Bd. Educ., Newark, plans by E. William Martin, 830 West St., Wilmington, HIGH SCHOOL. **$4,000,000.** Chester I. Duncan, 225 S. 15th St., Phila., Pa., consult. engr. CD 1/10/61.

▲ **Fla., Fort Myers**—Fort Myers Housing Auth., Fort Myers, plans by Sellew & Shaw, Box 1427, Sarasota, HOUSING. **$2,600,000.** McBryde & Frizzell, 2120 McGregor Blvd., assoc. archts. Bids late 1961.

▲ **Ga., Atlanta**—City Bd. Educ., City Hall, plans by Finch, Alexander, Barnes, Rothschild & Paschall, 70 Fairlie St. N.W., Anderson-Park Clement ELEMENTARY SCHOOL, **$400,000.**

plans by Robert & Company Assocs., 96 Poplar St. N.W., Carver VOCATIONAL and TECHNICAL SCHOOL, **$2,000,000.**

plans by A. Thomas Bradbury & Assocs., 60 5th St. N.E., Field Road ELEMENTARY SCHOOL, **$585,000.**

plans by **Bodin & Lamberson**, 827 Forsyth Bldg., Smith-Hughes VOCATIONAL and TECHNICAL SCHOOL, **$2,000,000.**

plans by Tucker & Howell, Rhodes-Haverty Bldg., OFFICE ADDITION, **$490,000.**

plans by Aeck Assocs., 180 Techwood Dr. N.W., ELEMENTARY SCHOOL in Collier Heights area, **$400,000.**

plans by Cooper, Barrett, Skinner, Woodbury & Cooper, Inc., Henry Grady Bldg., four ATHLETIC STADIUMS, **$800,000.**

plans by Edwards & Portman, 500 Grand Theater Bldg., SCHOOL MAINTENANCE SERVICE CENTER, **$1,000,000.** CD 2/3/61.

▲ **Me., Waterville**—City, Supt. Schools, Pleasant St., plans by Bunker & Savage, 86 Court St., Augusta, HIGH SCHOOL. **$1,400,000.** C 9/14/60.

▲ **Mass., Lexington**—Town, Supt. Schools, 1557 Mass. Ave., plans by The Architects Collaborative, 63 Brattle St., Cambridge, ELEMENTARY-SECONDARY SCHOOL, Muzzey St. **$3,000,000.** Bids May 1961.

▲ **Mo., North Kansas City**—Bd. Educ., 2000 E. 46th St. N., Zone 16, voted $2,000,000 bonds Feb. 7, JUNIOR HIGH SCHOOL, Maplewood area, **$1,410,000.** Bids in September. CD 2/10/60.

▲ **N. J., Newark**—Bd. Educ., 31 Green St., plans by Fava & Saunders, 30 James St., Barringer HIGH SCHOOL, **$5,000,000;** plans by Litwack & Shteir, 9 Clinton St., Newark, Miller Street SCHOOL ADDN., **$1,250,000;** plans by Rudolph Kruger, 11 Hill St., Newark, Pershing Ave., SCHOOL ADDN., **$1,250,000.**

▲ **N. Y., Brooklyn**—Bureau Constr. Bd. Educ., 42-15 Crescent St., Long Island City, plans by Eggers & Higgins, 100 E. 42 St., New York, Zone 17, Proj. E-496, Academic HIGH SCHOOL, Rockaway Parkway and Ave. J. **$6,500,000.** To go ahead 1961. CD 1/25/60.

▲ **N. Y., Far Rockaway**—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, plans by Katz, Waisman, Blumenkranz & Weber, 551 5th Ave., New York, Zone 17, Proj. E-737, 3 story PUBLIC SCHOOL 197 vicinity Nameoke St. and Dinsmore Ave. Queens Boro. **$2,500,000.** S. A. Bogen, 263 W.38 St., New York, Zone 18, mechanical engr. Fraioli-Blum-Yesselman, 250 E.43 St., New York, Zone 17, structural engrs. Zion & Breen, 141 E.44 St., New York, Zone 17, site engr. Bids August 1961. CD 1/25/60.

▲ **N. Y., Port Washington**—Bd. Educ., 100 Campus Dr., voted referendum Feb. 14, ELEMENTARY SCHOOL, west North Middle Neck Rd. and south Sands Point Golf Course. **$1,660,000.** Eggers & Higgins, 100 E. 42 St., New York, Zone 17, archts. C. V. Linn, 101 Park Ave. New York, Zone 17, N. Y., mechanical engr. Kenneth Tomann, 450 7 Ave., New York, Zone 1, structural engr. Bids June 1961. CD 1/26/61.

▲ **O., Cincinnati**—Cincinnati Metropolitan Housing Auth., 595 Armory Ave., plans by Sam Hannaford & Sons, Dixie Terminal Bldg., 8 to 10 story, brick, concrete block HIGH RISE APARTMENT FOR ELDERLY, Avondale Area. **$1,000,000.** Harry L. Reese, c/o owner, engr. CD 1/6/50.

▲ **O., Perrysburg**—Bd. Educ., Louisiana and Indiana Sts., HIGH SCHOOL. **$1,400,000.**

▲ **Pa., Carlisle**—Carlisle Area Jt. School Dist., plans by W. L. Murray & Associates, 1600 N. 2nd St.,

(Continued on page 109)

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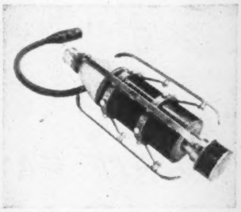
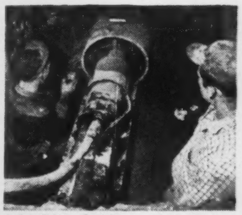
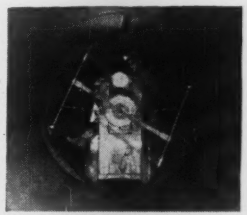


4"-14": Machine slides past corporation cocks and laterals without excavation. For small mains, fire lines, distribution grids. About 500 feet between openings.



16"-22": Self-propelled machine with automatic trowelling attachments. About 800 feet between openings.



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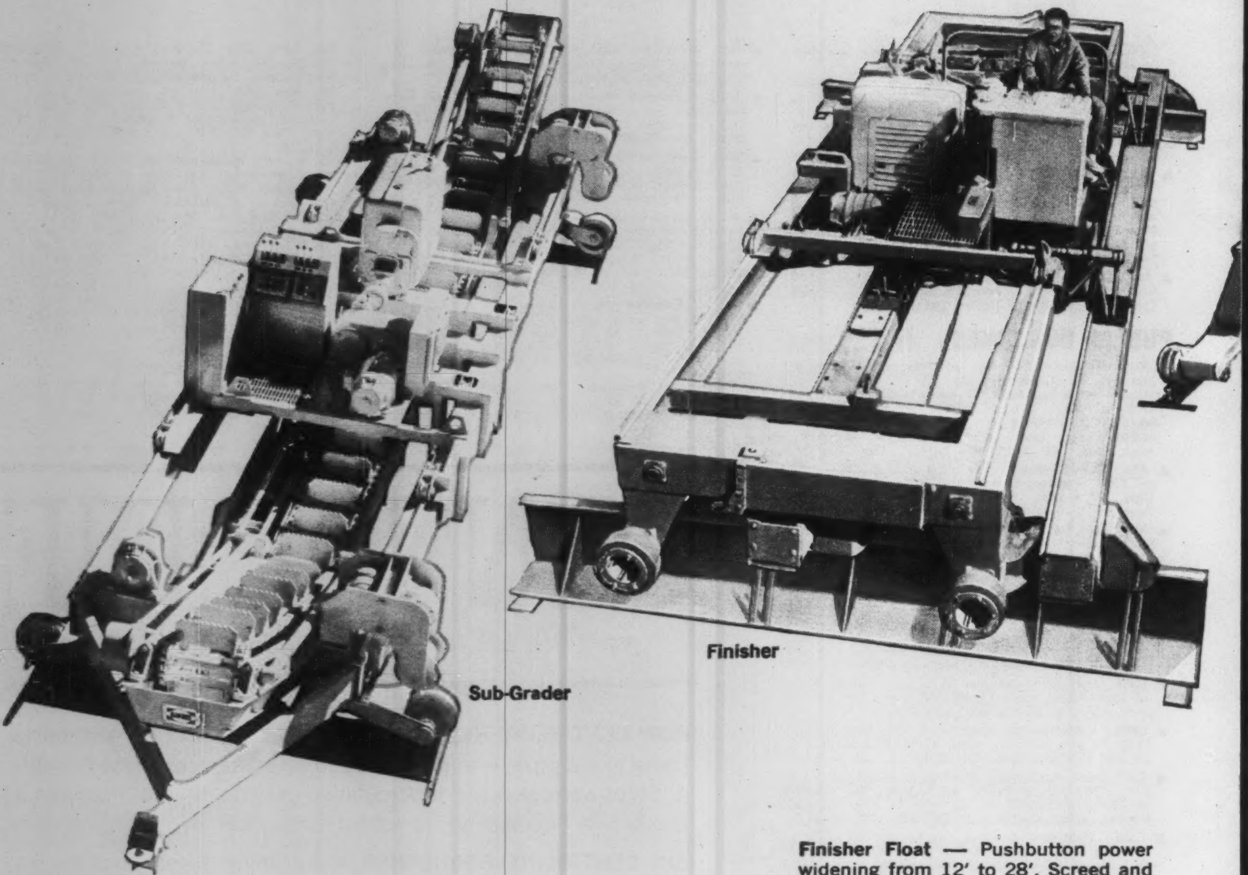
Branch offices in principal cities of the United States, Canada and Latin America



Sub-Grader—Revolutionary pushbutton power widening from 12′ to 28′. Automatic control system sets frame, conveyor and cutter bowl adjustment up to 4′. Easy-to-add sections readjust conveyor and cutter unit to 8′ to 12′. Entire range of depth adjustment made with synchronized electric power from 0″ to 12″. 14″ of height adjustment for form clearance at each end truck, independently or simultaneously. V-crown adjustment electrically controlled to within 3″. Parabolic crown hydraulically controlled. Electrically-powered travel speeds forward and reverse up to 40 f.p.m.

Finisher — Revolutionary pushbutton power widening from 12′ to 28′ without frame alteration in an infinite range of increments. Frame positions automatically without bolts or clamps. Screeds available in both crown bolt and quick adjustable types. Screed speeds infinitely variable between 40 and 105 strokes per minute, are controlled independently from traction speeds. Traction speeds infinitely variable between 8 and 80 f.p.m. through heavy-duty, high torque, variable frequency AC motors and gear reducers in each end truck. Power supplied by variable speed alternator driven by 4-cylinder engine.

Finisher Float — Pushbutton power widening from 12′ to 28′. Screed and pan-type float are quick adjustable for crown and operating position with synchronized electric power. Suspended oscillating screed is powered from Finisher through electric clutch and universal drive. Float is attached to Finisher and controlled through its own pushbutton controls mounted near the control panel of the Finisher.

Concrete Spreader—Automatic transverse blade delivers spreading action regardless of where concrete is placed on subgrade without segregation. Machine available in two standard widths—10′ to 15′ and 20′ to 25′. Vibratory paving attachment available to compact concrete simultaneously with spreading action. Rubber-tire transportation wheels available for spreader and vibratory attachment.

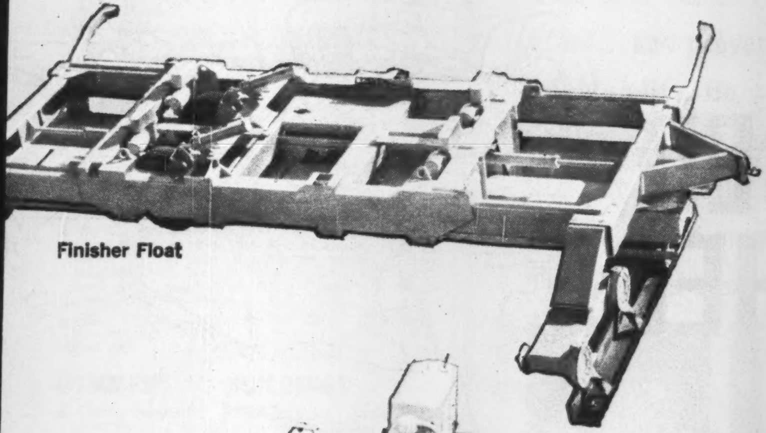
THE NEW LOOK IN CONCRETE PAVING:

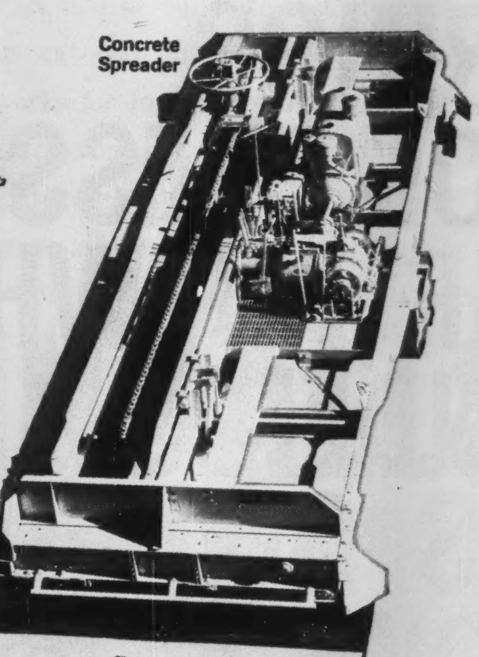
MORE AUTOMATIC,

Here's concrete paving equipment that gives you flexibiltiy and automatic operation to a degree never before possible.

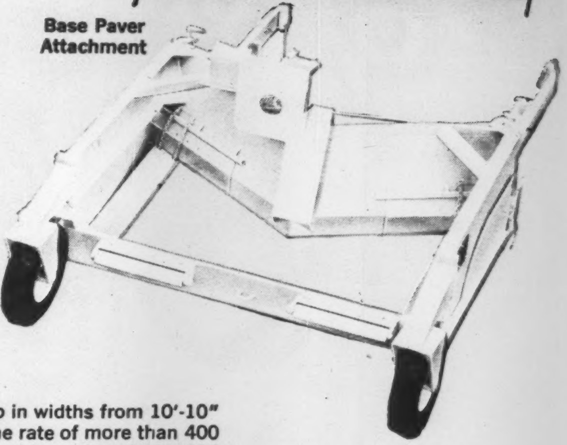
With these new Blaw-Knox machines in your paving train, the day is gone when a change in paving width meant hours of delay in resetting machines. These Blaw-Knox machines give you pushbutton, power widening right on the forms!

Check into the features of these new, automatic machines. They'll help you bid closer, work tighter and make more money the day you put them to work! Your Blaw-Knox distributor is the place to get started. Blaw-Knox Company, Construction Equipment Division, Mattoon, Illinois.





Self-Propelled Base Paver



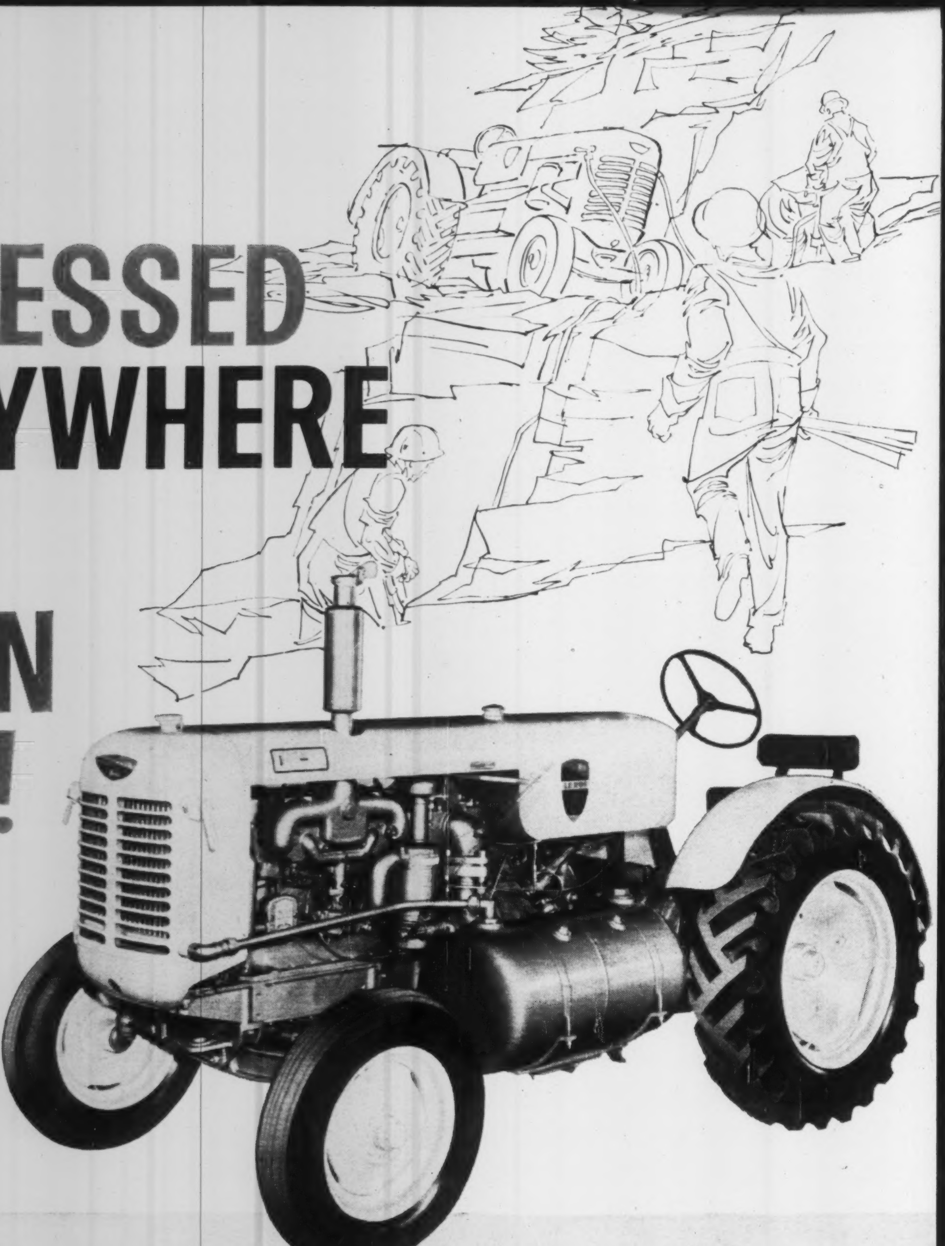
Base Paver Attachment—Big capacity unit designed especially for use with standard tractors of sufficient power. New universal hitch makes attachment easy. Equipped with its own engine-driven oscillating screed, and mechanical crown adjustment. Spreads stone, slag, gravel, soil cement and plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0". Hopper lifts completely for travel.

Self-Propelled Base Paver—Big capacity unit spreads stone, slag, gravel, soil cement or plant mix aggregates 1" to 20" deep in widths from 10'-10" to 16'-0", at the rate of more than 400 t.p.h. Tractor unit is equipped with 21" wide crawler shoes for maximum traction and flotation on softest base. Equipped with high-speed oscillating screed, front wheel power steering, dual controls. Four forward and four reverse working speeds, one forward and reverse travel speed.

VERSATILE, RUGGED THAN EVER BEFORE!

BLAW-KNOX
Construction Equipment

BRINGS COMPRESSED AIR ANYWHERE UNDER ITS OWN POWER!



Here's a self-propelled air compressor that eliminates *all* the dead time spent by conventional compressors waiting to be towed somewhere!

The Tractair is a 42-hp tractor and a 125-cfm air compressor. It brings air power to sites you'd fear to tread with truck-towed compressors. You can park it in a ditch or on a steep slope, attach the hose, and start drilling. When finished, the operator drives it to the next job — without waiting for a tow truck or men to jockey it into position. You can drive up close to the work, too, which means shorter hose . . . less hose damage . . . and full 125 cfm power at the tool.

The improved Tractair offers greater efficiency and fuel economy. It's designed for operator convenience . . . all-weather dependability . . . and the easiest servicing in the field. Add available attachments and you have a money-saving self-propelled air-plant for year-around construction and maintenance work.

Ask your Le Roi distributor for a free demonstration. Or write to Le Roi Division, Westinghouse Air Brake Co., Sidney, Ohio.

LE ROI TRACTAIR® AIR COMPRESSORS

T-01

PORTABLE AND TRACTAIR® AIR COMPRESSORS • STATIONARY AIR COMPRESSORS • AIR TOOLS

(Continued from page 105)

Harrisburg, JUNIOR HIGH SCHOOL. **$1,500,000.** CD 5/11/60.

▲ **Pa., Phila.**—University of Pennsylvania, 3025 Walnut St., plans by Martin Stewart & Noble, 117 S. 17th. St., Atomic Energy RESEARCH, underground parking, **$2,500,000.** CD 10/14/46.

▲ **Tenn., Morristown**—Morristown Housing Authority, 600 Sulphur Springs Rd., plans by George N. Javo & Associates, 881 Peachtree Blvd., Atlanta, Ga., low rent HOUSING PROJ. **$1,500,000.**

▲ **Tex., San Antonio**—City Public Service Bd., 145 Navarro St., 165,000 KW TURBO-GENERATOR, W. B. Tuttle Power Plant, **$7,810,000.**

▲ **Va., Roanoke**—City, City Hall, **$2,200,000** bond election.May 2, MUNICIPAL AUDITORIUM. CD 10/27/59.

▲ **B. C., Vancouver**—City, 453 W. 12th Ave., Vancouver, plans by H. N. Semmens & Assocs., 1272 W. Pender St., 14 story APARTMENT, 3 and 4 story MAISONETTES, McLean Park Project. **$2,000,000.** Read, Jones, Christoffersen, 1161 Melville St., consult engrs. CD 8/18/49

▲ **Ont., Toronto**—Scarborough Bd. Educ., 2472 Eglinton Ave. E., CENTRAL SECONDARY SCHOOL, Midland Ave. **$1,856,000.**

COMMERCIAL BUILDINGS

▲ **Calif., Orange**—St. Joseph Hospital, Stewart Dr., plans by John W. Maloney, Central Bldg., Seattle, Wash., 5 story, 385-bed HOSPITAL, **$8,000,000.** Bids April 1962. CD 6/15/60.

▲ **Fla., Daytona Beach**—Owner, c/o Broleman & Rapp, archts., 1216 E. Colonial Dr., Orlando, 128 unit 6 story, 171,345 sq. ft. APARTMENT, swimming pool on Halifax River, **$2,800,000.**

▲ **Ill., Chicago**—Catholic Bishop of Chicago, 719 N. Wabash Ave., plans by McCaughey, Erickson, Kristmann & Stillbaugh, 3 S. Prospect Ave., Park Ridge, RESURRECTION HIGH SCHOOL and AUDITORIUM, Talcott Rd. and Oriole Ave. **$2,000,000.**

▲ **Ky., Alexandria**—Equitable Investment Co., 25 W. Gay St., Columbus, O., MOTEL-CONVENTION HALL, swimming pool, Campbell County Park site, south of here. **$2,500,000.** Bids late 1961.

▲ **Minn., West St. Paul**—Bisanz Bros. Realty & Development Co., 1055 Cleveland Ave. S., St. Paul, plans by Community Planning & Design Assocs., 2635 University Ave., St. Paul, COMMERCIAL DEVELOPMENT, 50 acre tract west of Robert St. between Thompson and Emerson Aves. **$10,000,000.**

▲ **N. J., Darlington (P. O. Ramsey)**—Archdiocese of Newark, 33 Mulberry St., Newark, and Immaculate conception Seminary, Valley Rd., Darlington (P. O. Ramsey), plans by Fanning Assocs., 49 Ward St., Paterson, PHILOSOPHY BLDG., Valley Rd. **$4,000,000.** CD 1/9/61.

▲ **N. J., Hackensack**—Interboro Holding Corp., 477 Main St., plans by Erwin Gerber, 11 Commerce St., Newark, 50 HOUSES, on Altschuler tract. **$1,500,000.** CD 4/29/60.

▲ **N. J., Trenton**—Rider College, 428 East State St., plans by Ronald E. Vaugh, 19 South Main St., Yardley, Pa., 3 level, 60,000 sq. ft. LIBRARY, Over **$4 000,000.** CD 9/26/56.

▲ **N. M., Clovis**—Methodist Church, Dpt. Home for Aged, Dr. L. B. Troan, Director of New Mexico, Conference, brick, masonry, related work HOME FOR AGED. **$2,250,000.**

▲ **N. Y., New York**—50 W. 44 St. Bldg. Corp., 50 W. 44 St., Zone 19, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, 12 story OFFICES ADDN. to 8 story bldg. and alterations. **$7,000,000.** Weiskopf & Pickworth, 230 Park Ave., Zone 17, struc. engrs. Syska & Hennessey, 144 E. 39 St., Zone 16, mech. engrs. Bids in March or April. CD 12/6.

▲ **N. C., Charlotte**—Syndicate, c/o Thomas F. Mains & Co., Willow Lawn, Richmond, Va. plans by David Warren Hardwicke, 303 W. Carry St., Richmond, Va., 1,200 unit Green Oaks APARTMENTS, OFFICES, swimming pool. **$15 000,000.**

▲ **O., Obetz (Br. Columbus)**—Forbes Co., 2244 Mock Rd., Columbus, 1,000 HOMES, 220 APARTMENTS, SHOPPING CENTER, SEWAGE DISPOSAL PLANT, **$4,000,000.**

▲ **O., Streetsboro**—Marvin Helf, Inc., 10001 Carnegie Ave., Cleveland, Zone 6, plans by Keeva Kekst, 3121 Euclid Ave., Cleveland, Zone 15, 165 HOMES, **$2,500,000.** Construction in four months.

▲ **Pa., Lafayette Hill**—Leonard Polis, 133 Byberry Rd., Hatboro, plans by Leon L. Levin, 1923 Manning St., garden type APARTMENTS, Bethlehem Rd., etc. Over **$2 000,000.** Bids Spring-Summer, 1961.

▲ **Pa., Phila.**—Oak Lane Park, Inc., c/o Stonrov & Hows, archts., 117 S. 17th St., 272 units Cooperative APARTMENT HOUSE, Old York Rd. Over **$2,500,000.**

▲ **Pa., Phila.**—St. Christopher's Hospital for Children, 2600 N. Lawrence St., plans by Martin Stewart & Noble 117 S. 17th. St., HOSPITAL ADDN. **$2,962,639.** Allabach & Renis, 16 S. Broad St., consult. engrs. Bids April 1961. CD 7/2/56.

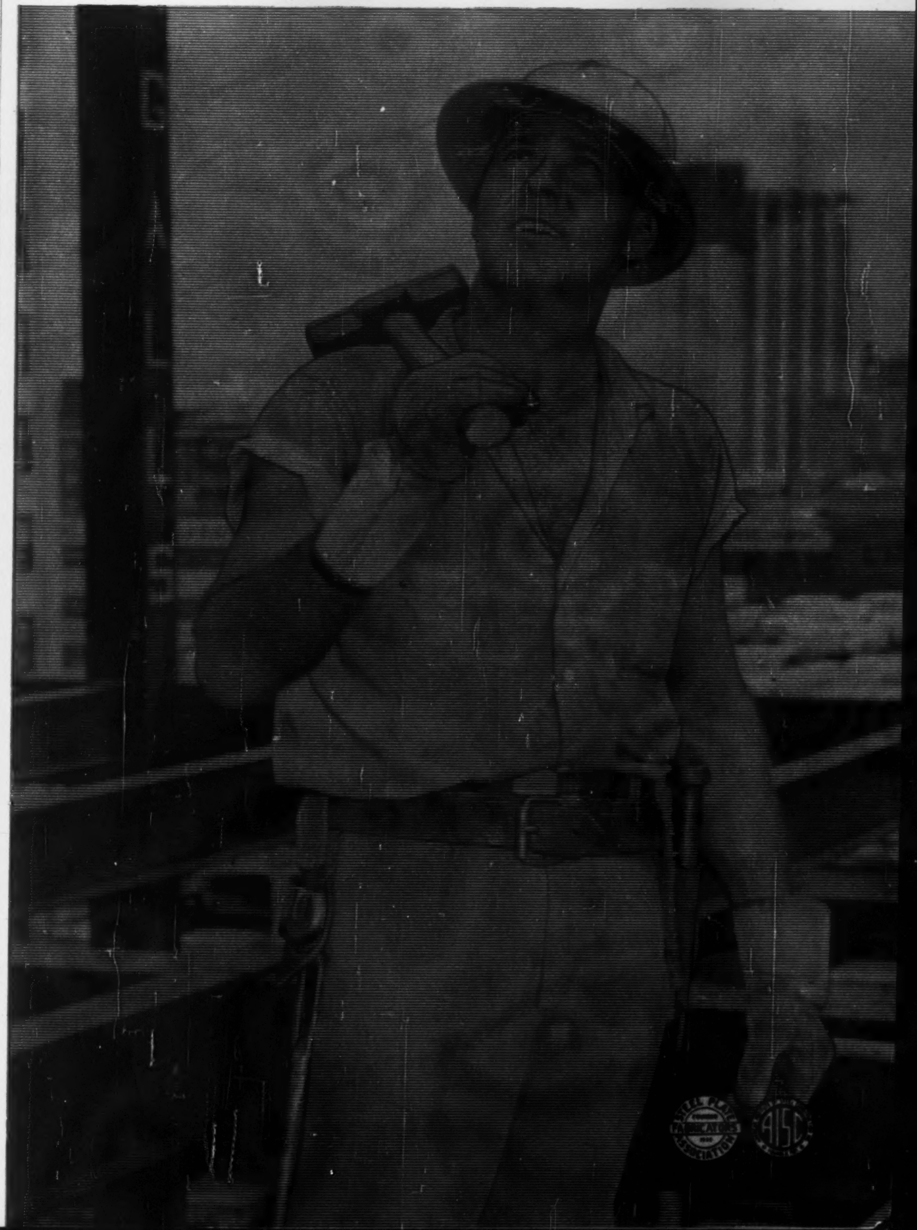
▲ **R. I., Providence**—R. C. Diocese of Providence, plans by Kiff, Colean, Voss & Souder, (Office York & Sawyer,) 230 Park Ave., New York, N. Y., St. Joseph's HOSPITAL WING, between Peace and Plenty Sts., **$5,000,000.**

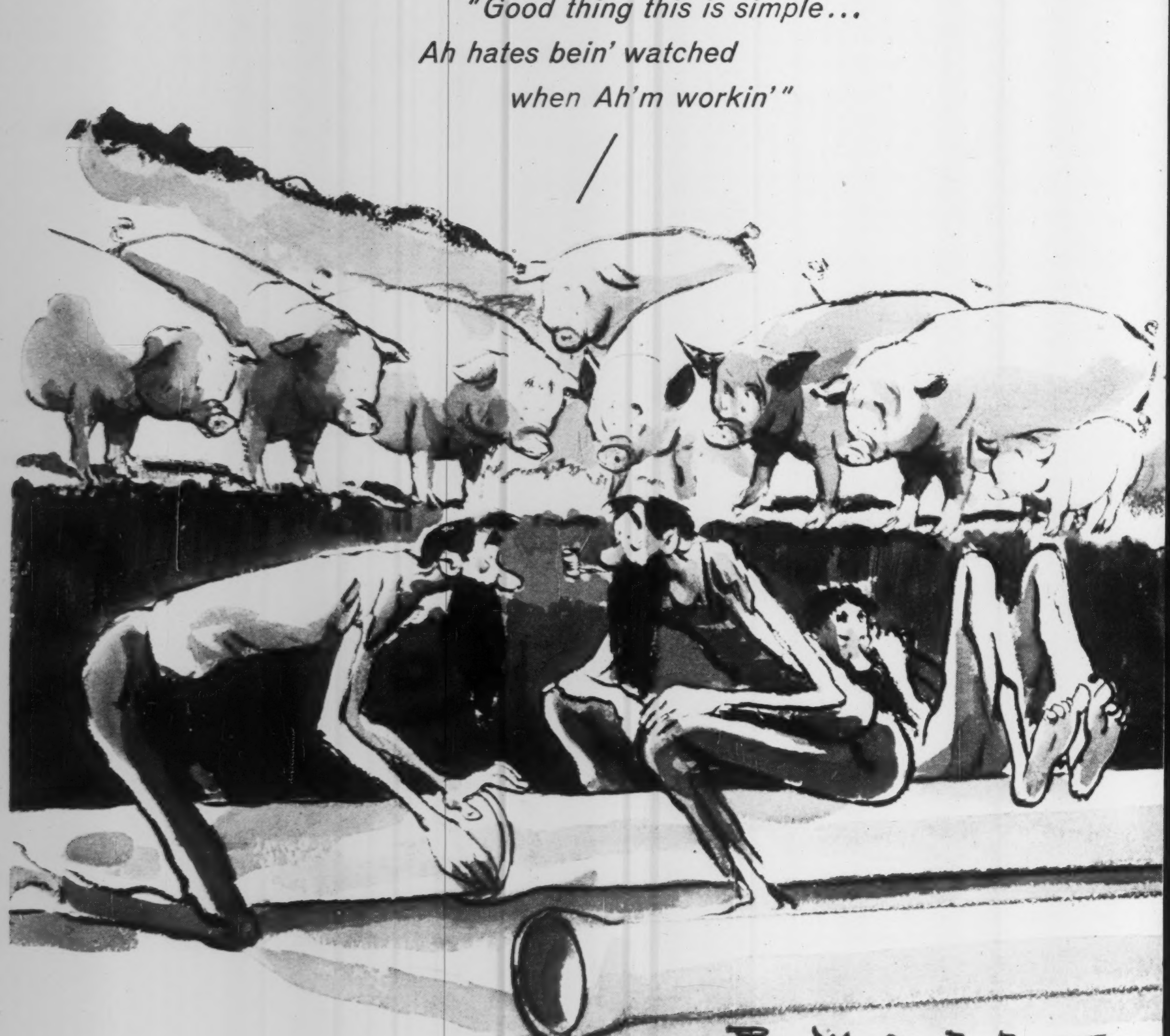
▲ **Tex., Dallas**—W. W. Caruth, Jr., 355 Hillside Village, DEPARTMENT STORE, Northwest Hy., Abrams Rd. and Skillman Ave., **$2,750,000;** SHOPPING CENTER, Northwest Hy., Abrams Rd. and Skillman Ave., **$8,000,000.** Chas. Goldstone & Assoc., lessees.

(Continued on page 116)

WHEN HE GOES UP...YOUR COSTS GO DOWN! This man builds fast, and he builds to last. He works with steel...the proven material for strength, endurance, and adaptability. He works for Ingalls...the proven source for skill, versatility, and economy in steel fabrication and erection. Steel and Ingalls...together they make a great team. Why not get them on your side on your next construction job? The Ingalls Iron Works Company / Birmingham, Alabama

INGALLS




"Good thing this is simple...
Ah hates bein' watched
when Ah'm workin'"
P. WEBB

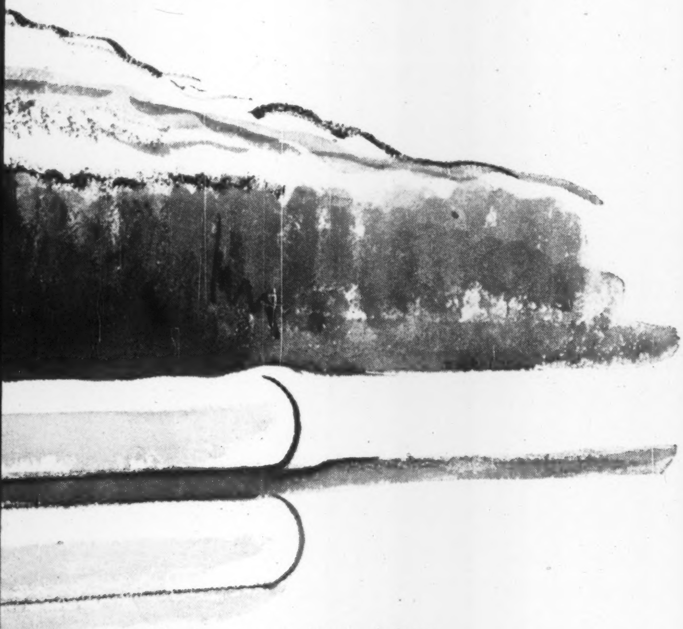
**U.S.
cast iron
PIPE**
FOR WATER, SEWERAGE AND

worth looking into!

Fact! Whenever . . . wherever Tyton Joint® pipe goes into the ground it wins more than its share of attention.

And why not? Tyton's so simple . . . so easy to assemble . . . it's a joy to watch. Only one accessory needed—a rubber gasket. No bell holes. No nuts, bolts or caulking equipment. Reduces weather worries too . . . Tyton can be laid in rain or wet trench.

Simple, speedy, sure, Tyton Joint* pipe is one big answer to today's problem of steadily rising costs. Get the money, time and labor-saving facts today. Call or write.



U. S. PIPE AND FOUNDRY COMPANY
General Office: Birmingham 2, Alabama

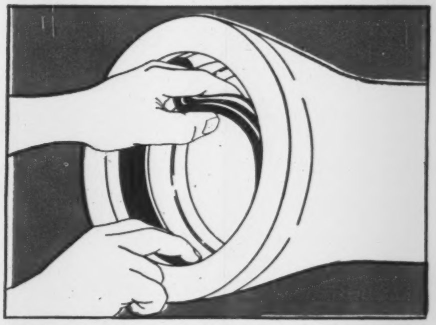
A Wholly Integrated Producer from Mines
and Blast Furnaces to Finished Pipe.

* U. S. Patent No. 2,953,398

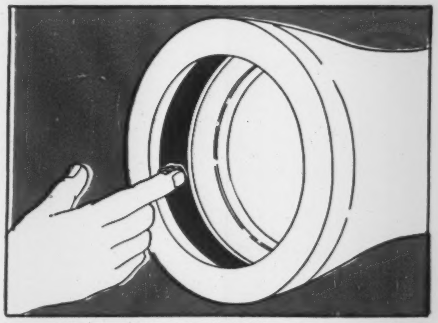
NDUSTRIAL SERVICE CAST IRON ®

TYTON®

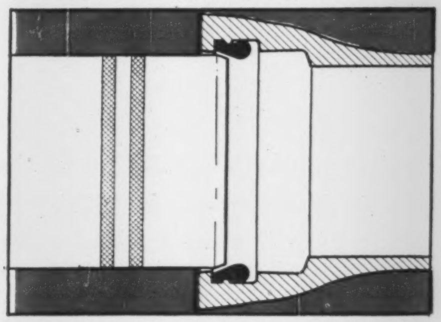
ONLY FOUR SIMPLE ACTIONS



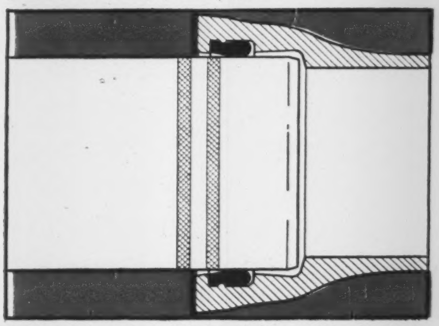
Insert gasket with groove over bead in gasket seat . . . a simple hand operation.



Wipe film of Tyton Joint® lubricant over inside of gasket. Your receiving pipe is ready.



Insert plain end of entering pipe until it touches gasket. Note two painted stripes on end.



Push entering pipe until the first painted stripe disappears and the second stripe is approximately flush with bell face. The joint is sealed . . . bottle-tight, permanently! The job's done . . . . fast, efficiently, economically. Could anything be simpler?

Best of the cranes . . .
best of the diesel pile hammers

ONLY LINK-BELT GIVES YOU BOTH!

Single-source pile driving package opens up new profit opportunities on bridge and structure work!

1936
1961
25 years of controls leadership

BEST OF THE CRANES INCLUDES: Full-Function-Design upper that benefits from separate power flows for each crane operation. Boom, hoist, swing and travel one at a time, or all at once. There's also provision for an optional third inhaul line to "snake" in piles.

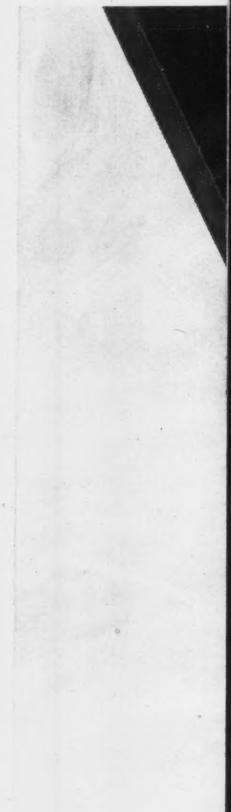
Speed-o-Matic true power-hydraulic controls govern ALL crane moves. Response is instant, smooth . . . never any jump, jerk or lag.

And there's greater line pull for peak loads; higher strength machinery parts; all-welded, stress-relieved uppers and lowers; increased lifting capacities at extended boom radii.

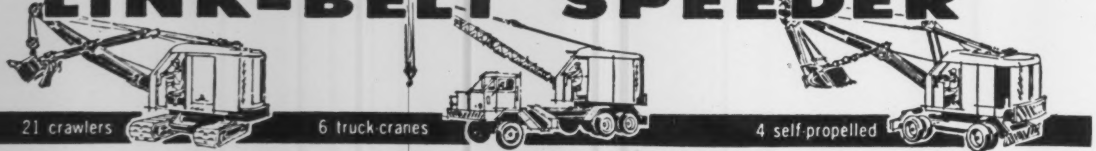
BEST OF THE DIESEL PILE HAMMERS INCLUDES: All controls at the operator's fingertips. Number of blows per minute doubled over competitive diesel hammers. *Tri-power* cycling provides pile preloading, high impact and two-way explosion. Glow plug and atomized fuel injection for faster starts in cold weather or soft ground.

Low initial investment — no boilers, compressors, or auxiliaries. Choice of 3 hammers: up to 7,500, 18,000 or 30,000 ft.-lbs. per blow. Nation-wide service and parts availability — 120 outlets in the U.S. and Canada.

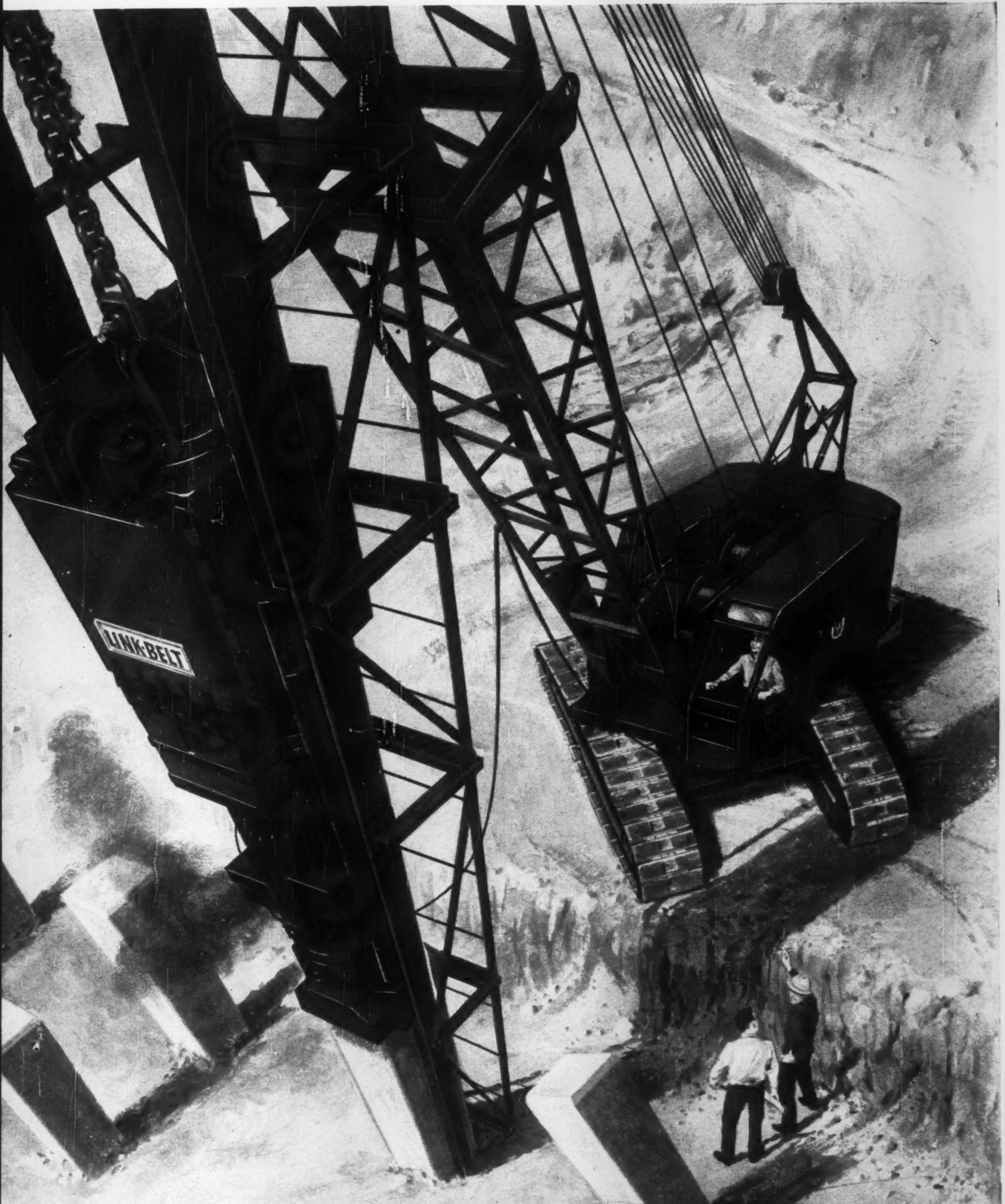
Take the *single-source* approach to pile driving profitability. See your Link-Belt Speeder distributor. Or write Link-Belt Speeder Corporation, Cedar Rapids, Ia. 110-61N



LINK-BELT SPEEDER



It's time to compare . . . with Link-Belt Speeder

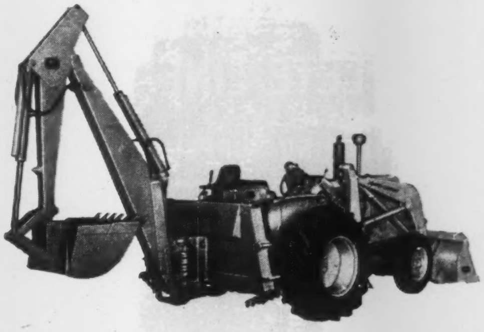

LINK-BELT

JOHN DEERE

Get set for higher profits—lower bids with new high-production

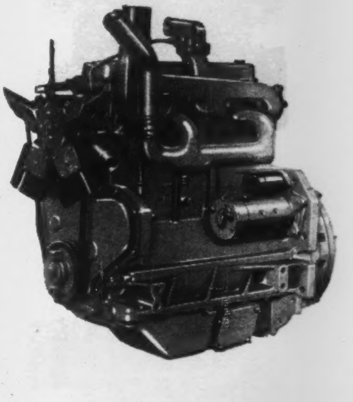
3010 Wheel Power

Now—cut the big jobs down to size with an all new 65 engine horsepower John Deere "3010." Move into tough loading and material handling assignments with this smooth-handling wheel loader; tackle major trenching jobs confidently with a "3010"-powered John Deere backhoe.



New Operating Ease: Convenient controls boost productivity of the heavy-duty "3010" Wheel Loader and power-matched backhoes. Single-lever control operates loader lift arms and bucket for rapid handling.

John Deere backhoes operate with simple two-lever control. Flush-digging model 51 has rotary boom cylinder which centers or slides to any of four off-center positions, moved by the unit's own hydraulic power.



Gasoline or Diesel Power: All-new John Deere 4-cylinder, 4-cycle overhead valve engines feature cam-ground aluminum pistons, high-turbulence combustion chambers for thorough fuel-air mixing, top efficiency. Replaceable-sleeve design for easy servicing. Large manifold insures free breathing at every speed. Exclusive forced engine ventilation. Full-pressure lubrication system with full-flow oil filter. Exhaust-valve rotators.

3010
DIESEL

Modern Platform, Control Design: Clean, functional "command post" assures all-day operator comfort and efficiency. Deluxe seat adjusts to operator's weight. Large clear platform makes mounting, getting down, fast and easy. Hydraulic controls conveniently located for smooth operation. Constant mesh transmission—8 speeds forward and 3 reverse, for any power requirement. Power steering, power brakes. Low-profile design provides high machine stability, excellent operator vision.

For a demonstration of new John Deere "3010" Wheel Power, contact your John Deere Dealer through the yellow pages of your telephone directory.

John Deere • 3300 River Drive, Moline, Illinois

JOHN DEERE LOADERS BULLDOZERS BACKHOES
AND EARTHMOVING EQUIPMENT

JOHN DEERE

Fennel

CHOOSE FROM OUR COMPLETE LINE OF TRANSITS, LEVELS & ENGINEERING SUPPLIES

OPTICAL PLUMMET TRANSIT

Check your needs:

☐ 6½" Transits
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☐ Theodolites
☐ 18" Levels
☐ Tilting Levels
☐ Rods, Tapes
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☐ Planimeters
☐ Builder's Instruments

SELF-LEVELING LEVEL

Send for latest catalog showing newest instruments, and for name of nearest Fennel dealer

FENNEL INSTRUMENT CORP. of AMERICA
50 Colfax Avenue, Clifton, N. J.

(Continued from page 109)

▲ **Tex., Dallas**—Coleman Development Corp. & Wm. Simpson Associates, 326 Cole Ave., plans by John S. Luckens, 2816 N. Hall St., 100 unit, luxury co-operative APARTMENT complex, **$2,750,000**; 200 room luxury MOTEL, recreation, playgrounds, **$2,000,000**. CD 1/20/61.

▲ **Tex., Dallas**—Southwestern Life Insurance Co., SW Life Bldg., plans by Geo. L. Dahl, **archt.-consult.** engr., 2101 N. St. Paul St., HOME OFFICE, Ross, between Akard and St. Paul Sts. **$4,000,000**. Bids Fall of 1961. CD 9/23/60.

▲ **Tex., Victoria**—Congregation of Sisters of Incarnate Word & Blessed Sacrament, plans by De Stefano & Cerna, 6963 San Pedro Ave., 3 story, 100,000 sq. ft. masonry MOTHER HOUSE AND NOVITIATE, concrete fdn. **$1,500,000**. Oscar W. Schuchart & Dennis E. Feigenspan, 6963 San Pedro Ave., San Antonio, consult. engrs.

▲ **Wash., East Bremerton**—Harrison Memorial Hospital, Bremerton, plans by R. E. Decker, 1411 4th Ave. Bldg., Seattle, and Branch, Branch & Garrison, Bremerton, 150-bed HOSPITAL. **$2,500,000**. CD 12/5/57.

▲ **Alta., Calgary**—Olympic Chinook Club, c/o 604 Lesson Lineham Bldg., plans by W. G. Milne, 604 Lesson, Lineham Bldg., CLUB, 15 acres, Elbow Drive south of 66th Ave. SW. **$1,500,000**.

▲ **Alta., Edmonton**—Parkview Development Ltd., c/o S. A. MacTaggart and Jean de La Bruyere, Gold Bar Farm, Edmonton, low rental HOUSING, 51st Ave. between 106th and 107th Sts. **$1,927,879**.

▲ **B. C., Victoria**—Royal Jubilee Hospital, 1900 Peel St., plans by Townley & Matheson, 1376 Hornby St., Vancouver, 6 story HOSPITAL WING, **$2,800,000**. Read, Jones & Christoffersen, 1161 Melville St., Vancouver, consult. engrs. CD 11/16/59.

▲ **B. C., Vancouver**—Vanada Securities Ltd., 5504 Cambie St., plans by Gerald Hamilton & Assocs., 1350 W. Pender St., 7 story, brick HOTEL, 2 story below ground for parking, swimming pool, **$1,500,000**. Phillips Barratt & Partners, 2090 W.4th St., consult. engrs.

▲ **N. S., Bedford**—Clayton Developments Ltd., c/o Bushell & Caldwell,, 433 Roy Bldg., P. O. Box 1602, Halifax, 4 stage HOUSING, incl. Housing, Commercial area, Schools and Parks, Bedford Basin, **$25,000,000**. Project Planning Assn., 40 Irwin Ave., Toronto, Ont., consult. engrs.

▲ **Que., Hull** — Carrefour, Inc., c/o Jules Gregoira, pres., 112 Principal St., plans by Jean Issalys, 112 Principal St., 2 story, concrete steel frame, brick veneer, glass block OFFICE and STORES, Main St. **$1,000,000**. J. Yves Bernier, 112 Principal St., consult. engr.

INDUSTRIAL BUILDINGS

▲ **Ill., Elgin**—Victor Gasket & Mfg. Co., 5750 W. Roosevelt Rd., Chicago, FACTORY, east side of here, **$10,000,000-$15,000,000**. Bids 1962.

▲ **Mich., Bay City**—Dow Chemical Co., 1000 Main St., Midland, PLANT to convert benzene-toluene mixture to benzene.

▲ **Mich., Detroit** — Aurora Gasoline Co., subsidiary Standard Oil Co. of Ohio, 15911 Wyoming St., Detroit, Zone 38, PLANT for benzene-toluene mixture, incl. platforming unit, Udex Extraction Unit. To go ahead 1961.

▲ **Mich., Detroit**—Aurora Refining Co. Div. Ohio Oil Co., 15911 Wyoming Ave. at Puritan, Detroit, REFINERY ADDN. for Benzene-Toluene mixture. Universal Oil Products, Inc., 30 Algonquin Rd., Des Plaines, Ill., consult. engr. CD 2/20/61.

▲ **N. J., Linden**—Nopco Chemical Co., 60 Park Pl., Newark, plans by Bechtel Corp., archts.-engrs., 485 Lexington Ave., New York, N. Y., ISOCYANATE PLANT, Tremley Point section. **$7,000,000**.

▲ **N. D., McGregor**—Hunt Oil Co., Mercantile Bank Bldg., Dallas, Tex., GAS PROCESSING PLANT, **$2,000,000**.

▲ **Pa., Neville Island (Br. Pittsburgh)—Marquette** Cement Mfg. Co., 20 N. Wacker St., Chicago, Ill., CEMENT PLANT.

AMERICANS ABROAD

▲ **Eire, Cork** — Irish & Intercontinental Hotels Ltd., Dublin, plans by William Tabler, 401 7 Ave., New York, N. Y., U.S.A., MOTOR HOTEL, swimming pool. **$1,500,000**.

▲ **Eire, Dublin**—Irish & Intercontinental Hotels Ltd., Dublin, plans by William Tabler, 401 7 Ave., New York, N. Y., U.S.A., 8 story 320-room HOTEL, swimming pool, Lansdowne Rd. **$4,000,000**.

▲ **Eire, Limerick**—Irish & Intercontinental Hotels Ltd. Dublin, plans by William Tabler, 401 7 Ave., New York, N. Y., U.S.A., 2 story MOTOR INN, swimming pool. **$1,500,000**.

LATIN AMERICA

▲ **Argentina**—Ledesma, S. A. Corrientes 378, Buenos Aires, BAGASSE PULP and PAPER MILL, Jujuy Province. **$9,100,000**. Parsons & Whittemore, Inc., 250 Park Ave., New York, N. Y., U.S.A., consult. engr. CD 10/3/59.

FOREIGN

▲ **Australia**—Ernest Forras, Mt. Buller, Victoria, WINTER RESORT, ski hotel, ski lift combination at Horse Hill, Mt. Buller, summer resort boatel at Swanson Point on Eidon Weir, **$1,130,000**. Owner changed. CD 11/15/60.

ANOTHER NEW ACHIEVEMENT IN MODERN FLOW CONTROL
BY CRANE

1 Single retaining nut holds cartridge assembly in body, for fast, foolproof dismantling and assembly

2 Teflon* thrust washer reduces stem friction; absorbs line pressure load on ball

3 Teflon* seats pre-loaded for tight shut-off with minimum torque

4 Bright plastic grip insulates handle and flags valve position

5 Positive, Standard Size O-ring seals on stem, cartridge

6 Self-aligning, precision-machined ball, polished and chrome-plated to minimize friction and wear on seats.

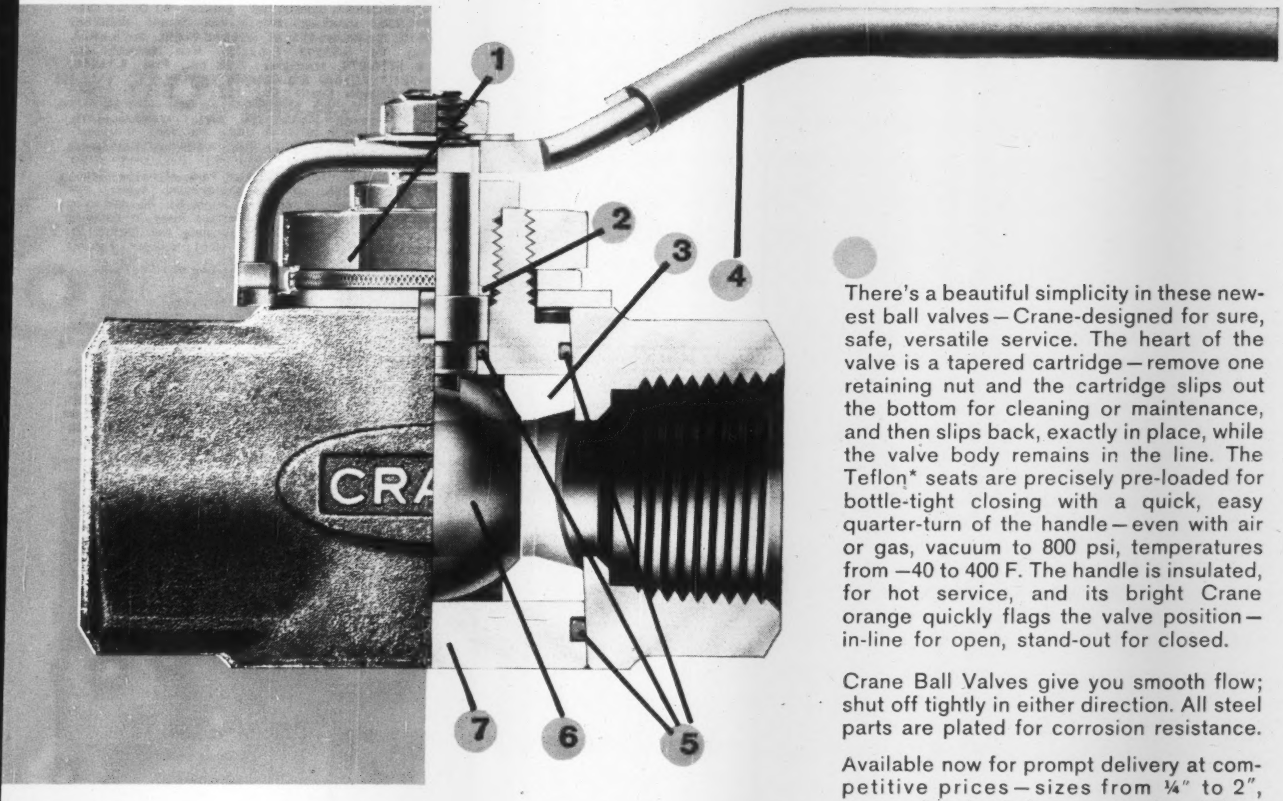
7 Tapered cartridge contains all working parts; slips out bottom in one piece for cleaning or maintenance

* Teflon is a registered trademark of E. I. DuPont de Nemours & Co., Inc.

CRANE BALL VALVES

with the exclusive tapered cartridge that drops out for fast, in-line servicing

designed to handle all air and water services to 400 F



There's a beautiful simplicity in these newest ball valves—Crane-designed for sure, safe, versatile service. The heart of the valve is a tapered cartridge—remove one retaining nut and the cartridge slips out the bottom for cleaning or maintenance, and then slips back, exactly in place, while the valve body remains in the line. The Teflon* seats are precisely pre-loaded for bottle-tight closing with a quick, easy quarter-turn of the handle—even with air or gas, vacuum to 800 psi, temperatures from —40 to 400 F. The handle is insulated, for hot service, and its bright Crane orange quickly flags the valve position—in-line for open, stand-out for closed.

Crane Ball Valves give you smooth flow; shut off tightly in either direction. All steel parts are plated for corrosion resistance.

Available now for prompt delivery at competitive prices—sizes from ¼" to 2", screwed ends, in bronze, steel and Type 316 stainless.

Call your Crane Distributor or send today for a complete, illustrated folder on the outstanding new Crane Ball Valves, engineered for unmatched service.

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Valves/Electronic Controls/Piping/Plumbing/Heating/Air Conditioning

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BUILDINGS—BA

▲ **Conn., Waterbury** — BA 4/6 — St. Mary's Hospital Corp., 56 Franklin St., HOSPITAL ADDN., Scovill St. $5,000,000. Extended date. **Polak & Sullivan**, 1397 Chapel St., New Haven, archts. **Arthur G. Beaulieu Assocs.**, 2348 Whitney Ave., Hamden, engrs. CD 2/17/61.

HEAVY CONSTRUCTION—LB & CA

▲ **Zappi & Co., Inc.**, 240 Sidney St., Cambridge, Mass., LB **$1,987,800**, MPA-1.009 HANGAR, Logan Airport, EAST BOSTON, MASS. Massachusetts Port Auth., 141 Milk St., Boston, Mass. Trans World Airlines, lessee. BA 2/28. CD 2/13/61.

BUILDINGS—LB & CA

▲ **Granger Constr. Co., Inc.**, 306 Main St., Worcester, Mass., LB **$1,362,870**, Regional JUNIOR-SENIOR HIGH SCHOOL, Boylston, BERLIN, MASS. Berlin-Boylston Regional High School Bldg. Comn., Berlin, Mass. BA 2/24. CD 2/1/61.

▲ **D. Guschov Co., Inc.**, 20 Pemberton Square, Boston, Mass., LB **$2,038,000**, JUNIOR HIGH SCHOOL, Middle St., WOBURN, MASS. City, P. Wks. Dpt., City Hall, Woburn, Mass. BA 2/28. CD 1/20/61.

MIDDLE ATLANTIC

BUILDINGS—BA

▲ **Md., Rockville**—BA /23—Montgomery County Bd. Educ., County Bldg., Wheaton-Kensington HIGH SCHOOL between Wisconsin Ave. and Viers Mill Rd., Kensington. Plans deposit $80. Johannes & Murray, 855 Pershing Dr., Silver Spring, archts. CD 3/4/60.

▲ **N. J., Elizabeth**—BA 6/15—Housing Authority City of Elizabeth, 688 Maple Ave., 10 story HOUSING FOR ELDERLY, on Cherry St., N. J. 34, $4,000,000. Kaufman & McMurray, 252 N. Broad St, archts. CD 4/27/60

HEAVY CONSTRUCTION—LB & CA

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, Bids opened 2/23, BRIDGE,

Wm. M. Moore Bldg. Corp. and Lopier Constr. Corp., 360 Lexington Ave., New York 17, N. Y., LB **$2,644,340**, est. $2,760,000 (2 bidders), bridge substructure comprising 2 abutments and 26 piers, 4.232.7 ft. total, Fire Island Inlet Bridge (Captree State Park to Fire Island State Park), Contr. 1, FIIB 61-1, Suffolk Co. (**Correction**—low bid price.) CD 2/24/61, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany, ROAD,

Schwab Bros. Trucking, Inc., 370 Sawyer Ave., Tonawanda, N. Y., CA **$1,387,964**, est. **$1,617,000**, grading, drainage 1.49 mi., misc. work 0.2 mi. b. conc. Type 2A (acc.) 1.14 mi. City of Buffalo; Fuhrmann Blvd. Art. Hy. Cont. 1 (Tifft St. to Buffalo Skyway) Rte. 5, FAC 61-4, Proj. U-750(21), Erie Co. BA 1/26. CA 2/14. CD 1/27/61, under LB.

▲† **The J. W. Cowpar Co., Inc.**, 1945 Sheridan Dr., Buffalo, N. Y., CA **$1,445,303**, ADDNL. BOMARC FACILITIES (FY 1961), Niagara Falls Air Force Base, ENG-30-075-61-80, NIAGARA FALLS, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. BA 2/21. CD 2/24/61, under LB.

BUILDINGS—LB & CA

▲ **Glassman Constr. Co., Inc.**, 2001 Wisconsin Ave. N.W., Wash., D. C., LB **$1,539,000** (4 bidders), JUNIOR HIGH SCHOOL, Ernshaw Tract, Brinkley Rd., Camp Springs, MARLBORO, MD. Prince Georges Co. Bd. Educ., Marlboro, Md. BA 2/27. CD 2/20/61.

SOUTH

BUILDINGS—BA

▲ **Ky., Newport**—BA 4/1—Campbell Co. Fiscal Court, 240 4 St., duplex-type Lakeside Manor HOUSING UNITS for Aged, Infirmary, Cold Springs. $2,500,000. Merriweather, Mayre & Assoc., 248 Short, Lexington, and Edw. J. Beiting, Jr., 1002 Monmouth, Newport, archts. CD 9/14/60, under Commercial Buildings.

HEAVY CONSTRUCTION—LB & CA

▲ **Wellman Engineering Co.**, 113 St. Clair St. N.W., Cleveland, O., CA **$5,000,000**, 1,380 ft. COAL PIER above floor level, incl. Barney haulage sys. tanden rotary dumpers, conveyor sys. and traveling ship loader, NORFOLK, VA. Norfolk & Western Railway Co., A. B. Stone, ch. engr., 8 N. Jefferson St., Roanoke, Va.. CD 12/5/60.

▲ **WEST VIRGINIA**—State Road Comn., Charleston, Bids opened 2/23, ROAD,

Haynes Constr. Co. & Savage Constr. Co., Box 1497, Bluefield, W. Va., LB **$1,549,872**, (9 bidders), grading, c. conc. 1.397 mi. Oak Hill Expressway, Proj. F 173(27) Contract No. 3, Fayette Co. CD 2/7/61.

▲ **NORTH CAROLINA**—State Hy. Comn., Capitol Bldg. Raleigh, bids opened 2/28, ROADS,

N. C.—**Blythe Brothers Co.**, 2911 N. Graham St. Charlotte, N. C., LB **$168,614**, widening, resurf. Secondary Rd. No. 1191 and No. 1205 From S. R. No. 1193, Northeast to Wilkerson Blvd., Secondary Rd., No. 3687 from point on NC 51, 0.5 mi. east of Pineville, North to S. R. No. 3600, grading, CABC, b. conc. binder and surf., 4.38 mi., Proj. No. 8.27216 8.27213, S-268(2), S-889(2), Mecklenburg Co.; LB **$2,080,274**, grading, CABC, conc. pavement addnl., lane on Interstate Route 40 bet. U. S. Route 158 East of Winston-Salem and NC Route 66 at Kernersville, 7.695 mi., Proj. 8.17467, I-40-3(18)197, Forsyth Co.;

N. C.—**Asheville Contg. Co.**, London Rd., Biltmore, N. C., LB **$2,140,859**, grading, CABC, b. conc. binder and surf., Interstate Route 40 from a point west of Clyde, North-east to Beaverdam Rd. north of Canton, Interstate Route 40, 7.56 mi., 8.10430, I-40-1 (7) 29, F-16(13), Haywood Co.;

▲ **NORTH CAROLINA**—State Hy. Comn., Capitol Bldg, Raleigh, Bids opened 2/28, BRIDGES,

N. C.—**McMeekin Constr. Co.**, Cheraw, S. C. LB **$1,344,938**, structure, bridge over Inland Waterway on U. S. Route 431 at Carolina Beach, U. S. 421, Proj. No. S.13593, F-622(8), New Hanover Str.; LB **$736,079**, structures, 2.58 mi., Proj. 8.16286, F-322(7), Iredell and Catawba Counties;

N. C.—**Crowder Constr. Co.**, 1123 E. 10th St., Charlotte, N. C., LB **$1,209,931**, structures, 7.56 mi., Proj. 8.19430, I-40-1(7)29, F-16(13), Haywood Co. CD 2/10/61.

▲ **TENNESSEE**—State Hy. Dpt., Nashville, Bids opened 2/24, ROADS,

Tenn.—**Oman Constr. Co.**, Acklen Park, Nashville, Tenn., LB **$2,856,106**, (8 bidders), grading, constr. nine bridges on sect. of Interstate Route No. 40, beginning at point just south of Cumberland River in Nashville near intersection of University Ave. and Carroll St. and extending easterly to point between Fesslers Lane and Elm Hill Pike, 1.475 mi., Proj. No. I-40-4 (7)209, Davidson Co.; LB **$2,618,757**, (5 bidders), grading, constr. one bridge on sect. of Interstate Route N. 65, in Nashville, beginning at north end of Cumberland River bridge near Crutcher St. and extending northerly to point between north 1st and Wichita Sts., 1.526 mi., Proj. No. I-63-3(10) 84 Pt. 1, Davidson Co.;

Tenn.—**John L. Burns, Inc.**, Donelson Pike, Donelson Tenn., LB **$2,509,888**, (7 bidders), grading, constr. five bridges, paving crossroads with bit. materials, and interstate traffic lanes and ramps with cement concrete on sect. of Interstate Route No. 40, beginning at point just west of Spence Lane between

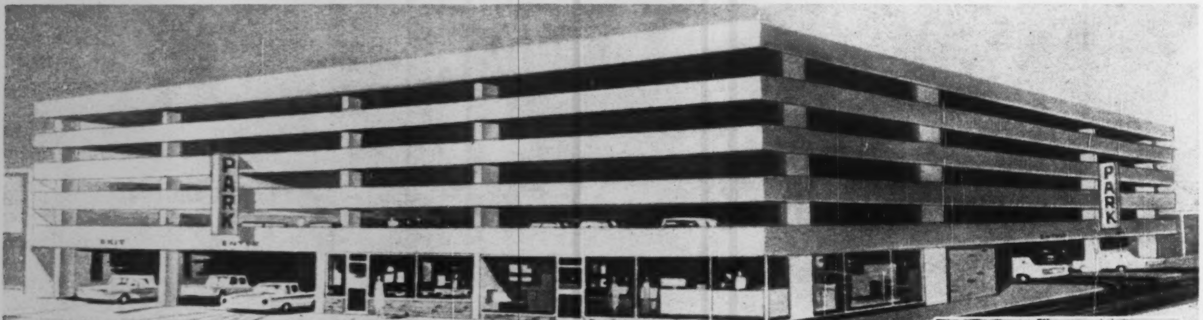

Photo of stressing end of a single tee to be used in large parking garage with spans of 63' and spaced 28' apart.

THE PRESCON SYSTEM OF POST-TENSIONING FOR PARKING GARAGES PROVIDES DESIGN FLEXIBILITY AND ECONOMY

Houston's parking problem will be reduced by the Allright, Inc. parking garage* (250 car capacity and 3000 sq. ft. of retail space). Using poured-in-place, pan type construction; joists are 18½" deep, maximum spans of 50'6", maximum bay width 43'6". Slabs covering the roof and retail areas are post-tensioned to render them waterproof.

Parking garages, nation-wide, have used these other types of construction with the Prescon System of post-tensioning: (1) Lin tees with stressed poured-in-place slabs, (2) dia-grid poured in place, (3) precast prestressed elements, (4) lift slabs.

For job site or yard use with many structure types, the Prescon System of post-tensioning offers savings and design flexibility using readily available materials.

Other parking garages using Prescon System: Dalton, Dallas; 1st Nat'l Motor Bank, Longview, Texas; Major Oil Company, downtown, Houston; Beverly Hills, (Calif.); Am. Nat'l Bank, Denver; Bd. of Trade, Kansas City; Hollywood Legion Bowling, (Calif.); Remington-Rand and Baldwin Chevrolet, Los Angeles.

*Consulting Engineers: Mullen and Powell, Dallas
Contractor: Spaw-Glass, Inc., Houston

PRESCON
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THE PRESCON CORPORATION
General Offices: P. O. Box 4186, TUlip 2-6571, Corpus Christi, Texas
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Member Prestressed Concrete Institute

Murfreesboro Rd. and Elm Hill Pike and extending eastward to point just east of McGavock Pike, 2.283 mi. Proj. No. I-40-5(7)211, Davidson Co.;

BUILDINGS—LB & CA

▲ **Daniel Constr. Co.**, 429 N. Main St., Greenville, S. C., CA Est. **$3,000,000**, fiberglass mfg. PLANT ADDN., ANDERSON, S. C. True Temper Corp., Starr Hwy., Anderson, S. C.

▲ **H. W. Ivey Constr. Co.**, 3330 Peachtree Rd. N.E., Atlanta, Ga., CA **$1,750,000**, 7 story, 120,000 sq. ft. OFFICE, ATLANTA, GA. 1421 Peachtree Corp., 1393 Peachtree St. N.E., Atlanta, Ga. James C. Wise, Simpson, Aiken & Assocs., 873 Spring St. N.W., Atlanta, Ga., archts.

▲ **S & F, Inc.**, P.O. Box 305, Nashville, Tenn., Owner Builds, **$2,000,000**, 140 RESIDENCES, Dodson Heights subdivision, NASHVILLE, TENN.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

▲† **N. D., Minot**—BA 3/30—Base Procurement Office, Minot Air Force Base, Minot, 210 units FAMILY HOUSING, Armed Services Housing Proj., Minot Air Force Base, IFB 32-604-61-72. Plans deposit $100. CD 3/12/58.

HEAVY CONSTRUCTION—LB & CA

▲† **Willamette Iron & Steel Co.**, 2800 N.W. Front Ave., Portland, Ore., CA **$3,020,053**, TURBINE, Dardanelle Lock and Dam, Arkansas River, CIVENG-03-050-61-32, ARKANSAS, U. S. Eng., Gay Bldg., Little Rock, Ark. CD 1/4/61, under LB.

▲† **Bushman Constr. Co.**, Schneider Bldg., Saint Joseph, Mo., CA **$2,655,044**, Missouri River Basin Proj., Merritt DAM, and ACCESS ROAD in Cherry Co., DC 5462, NEBRASKA. Bureau Reclamation, Dpt. Interior, Ainsworth, Neb. BA 2/8/61. CD 2/10/61, under LB.

▲ **Hawkins Constr. Co., and Tolboe and Harlin of Wyoming**, 2515 Deer Park Blvd., Omaha, Neb., LB **$8,841,613**, est. $9,650,000, (7 bidders), Missouri River TREATMENT PLANT, OMAHA, NEB. City, City Hall, Omaha, Neb. BA 2/28/61. CD 1/10/61.

▲† **George A. Fuller Co.**, 597 Madison Ave., New York, N. Y., and **Del E. Webb Constr. Co.**, 5101 San Fernando Rd. W., Los Angeles, Calif., CA **$61,773,644**, MINUTE MAN MISSILE BASE, Malmstrom Air Force Base, ENG-04-548-61-1, GREAT FALLS, MONT. Ballistic Missile Constr. Office, 5651 West 96 St., Los Angeles, Calif. BA 2/7. CD 1/19/61.

BUILDINGS—LB & CA

▲ **Johnson, Drake & Piper, Inc.**, Baker Bldgs., Minneapolis, Minn., CA **$1,765,737**, (6 bidders), STADIUM ADDN., BLOOMINGTON (P.O. MINNEAPOLIS), MINN. Metropolitan Sports Area Comns. 8001 Cedar Ave., Bloomington, Minn. Cerny Assocs., 300 First National Concourse Bldg., Minneapolis, Minn., archts. BA 2/28/61. CD 1/31/61.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

▲ **IDAHO**—Dpt. Hys., 603 Main St., Boise, ROAD, **Earl L. McNutt Co.**, S.E. of City, Boise, Idaho, CA **$1,431,584**, grading, 4-lane divided roadway, drainage structures, 1 grade separation, 1 interchange, 4 concrete bridges on 7.841 mi. Interstate 15, Bingham Co. BA 2/21/61. CA 2/28/61. CD 2/28/61, under LB.

BUILDINGS—LB & CA

▲ **C. L. Peck**, 816 W. 5 St., Los Angeles 17, Calif., CA **$5,450,000**, concrete STORE, 13900 Riverside Dr., Tract 20915, VAN NUYS, CALIF. Bullocks, Inc., 601 S. Westmoreland Ave., Los Angeles 5, Calif. Welton Becket & Assoc., 10000 Santa Monica Blvd., Los Angeles, Calif., archts. Brandow & Johnson, 2430 W. 3 St., Los Angeles, Calif., engrs.

CANADA

BUILDINGS—LB & CA

▲ **Goback Constr. Co.**, 21 Christine Crescent, Toronto, Ont., Owner Builds, **$1,250,000**, 6 story, masonry APARTMENT, Alexis Blvd., TORONTO, ONT. E. J. Simpson, 705A Lawrence Ave. W., Toronto, Ont., archt.

U. S. POSSESSIONS

BUILDINGS—BA

▲† **Canal Zone, Gorgas**—BA 6/12—Panama Canal Co., Balboa Heights, Gorgas HOSPITAL ADDN. $4,381,000.

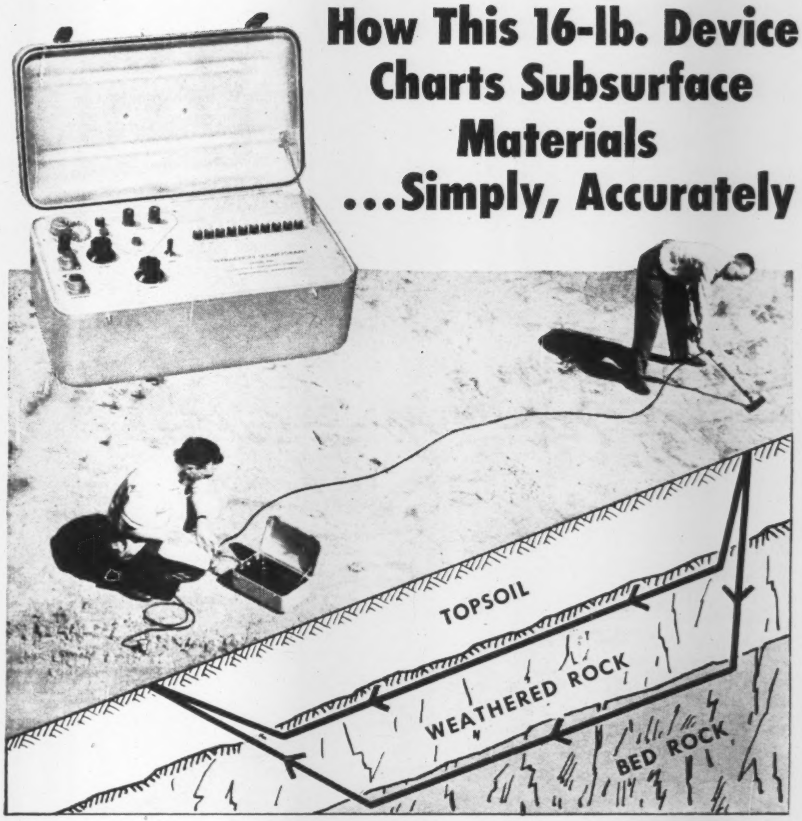
FOREIGN

BUILDINGS—LB & CA

▲ **Keir & Cawder Ltd.**, and **A. A. Stuart & Sons, Ltd.**, 5275 London Rd. E. 2, Glasgow, Scotland, CA Est. **$15,400,000**, Kadhemain HOSPITAL, BAGHDAD, IRAQ, Ministry of Housing 7 Works, Baghdad, Iraq. BA 9/26/59. CD 8/31/59.

(Proposal Advertisements see pp. 128 to 130)

How This 16-lb. Device Charts Subsurface Materials ...Simply, Accurately



That vital first step before you locate a highway or bid an excavation—providing accurate information about depth and type of materials below the surface—is far simpler and less expensive with this proven device, Geophysical's model MD-1* Engineering Seismograph.

It's easily portable, providing immediate information anywhere two men can go. Costly exploration crews and equipment are not required. And data obtained is not limited to single points as in drilling, but can cover the entire area of operation.

HERE'S HOW IT WORKS:

The sledge hammer produces sound waves which travel through the earth. The MD-1 measures the time required for the sound to travel a given distance. This time is determined by the depth and type of the material; the denser the material, the faster the sound waves travel. For example, sound travels slowest through overburden, faster through clay or weathered rock and still faster through solid rock. In this way, the MD-1 can determine single or multiple layers.

See how simply you can obtain your vital subsurface information with this Engineering Seismograph. Operate it yourself after a few minutes simple instructions. Demonstrations are now being scheduled on a regional basis. Write for full details.

*Patents pending

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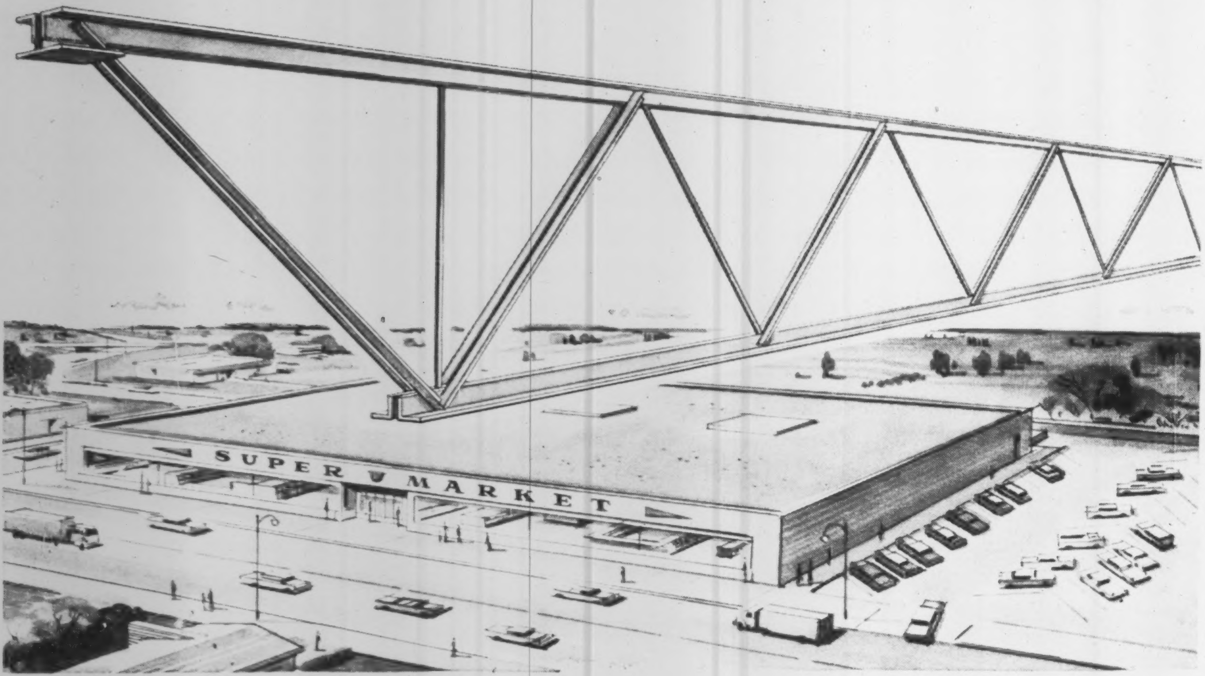
Now! Up To 144 Feet Clear Span



With Sheffield's New "LS-Joist"

Sheffield's new expanded facilities now make available the deeper and longer LS-series steel joists. The LS-series joists cover roof spans up to 144 feet and vary in depth from 52 inches to 72 inches. (Note: The Sheffield S-series steel joists vary in depth from 8 inches to 24 inches with a maximum span of 48 feet, and the L-series vary from 18 inches to 48 inches with a maximum span of 96 feet.)

This new Sheffield steel joist uses the recently adopted ASTM A36 steel and is designed in conformance with recognized standards provided for this steel. With this new joist Sheffield design engineers give you a tool to easily span those large, unobstructed floor areas.

Sheffield LS-Series Loading Tables

Roofs for garages, bowling alleys, supermarkets, warehouses can be designed easily using the new Sheffield LS loading tables which are now available. Write for your free copy: *Sheffield Division, Armco Steel Corporation, Sheffield Station, Kansas City 25, Missouri.*

SHEFFIELD

LS-Series

Long Span Open Web

Steel Joists

Strong
Tough
Economical
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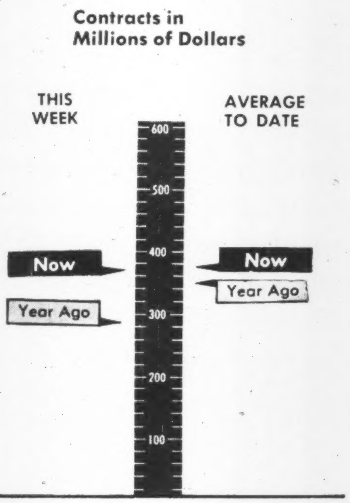
Steel

ARMCO Sheffield Division

Construction Scoreboard

This Week . . .



AMOUNT OF CONTRACTS LET

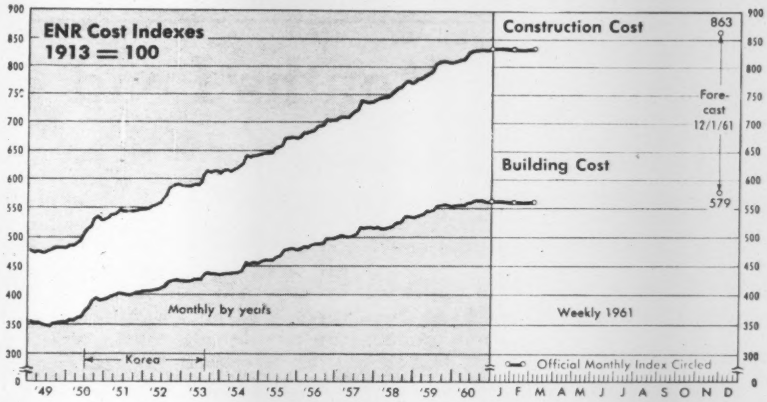
Contracts Awarded In 50 States By Type	This Week millions	Cum. 10 wks 1961 millions	Chge '60-'61 %
All Heavy Construction	$365.3	$3,791.1	+10
By Ownership			
PRIVATE	144.2	1,920.2	+2
PUBLIC	221.1	1,870.9	+18
State & Municipal	114.9	1,397.4	+17
Federal	106.2	473.5	+22
By Type of Work			
PUBLIC			
Waterworks	8.6	66.6	+16
Sewerage	14.9	114.3	+11
Bridges*	5.0	90.7	−49
Highways	42.3	630.4	+43
Earthwork, Dams & Waterways	13.6	116.2	+0.2
Buildings:			
Excl. Housing	38.3	461.3	+36
Housing	24.8	130.4	+49
Unclassified	73.7	261.2	−0.2
PRIVATE			
Buildings:			
Mass Housing	81.6	756.3	−12
Commercial	27.9	403.7	+20
Industrial	26.4	668.7	+38
Unclassified	8.2	91.3	−52

* Includes Private bridges

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88 000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Mar. 2 millions	Cum. 9 wks 1961 millions	Chge '60-'61 %
Corporate Securities	$38.7	$306.5	−24
State and Municipal:			
All Except Housing	258.1	1,161.1	−7
Housing	0	2.9	−76
Federal Loans	0	41.7	+173
Federal Aid	0	0	0
Total Nonfederal	$296.9	$1,512.3	−10
Federal Appropriations:			
Projects in U.S.	0	0	0
Outside U.S.	0	0	0
Total New Capital	$296.9	$1,512.3	−10



ENR INDEXES (1913=100), 20-cities' average	Week of 1961	% Change from Feb. 2 1961	% Change from Mar. 3 1960
Construction Cost	834.16*	—0.01	+2.5
Building Cost	562.89*	−0.01	+1.4

* Official Monthly Index for March 1961

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1919 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

This Month . . .

WAGE RATES, 20-cities' average	Mar. 1961	% Change from Feb. 1961	% Change from Mar. 1960
Common	$2.765	0	+3.7
Skilled (average 3 trades)	4.120	+0.02	+4.3
Bricklayers	4.336	0	+3.8
Structural Ironworkers	4.168	+0.09	+4.6
Carpenters	3.857	0	+4.5
Equipment operators (average three types)	3.747	0	+4.1

MATERIAL PRICES, 20-cities' average	Mar. 1961	% Change from Feb. 1961	% Change from Mar. 1960
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	115.63	−0.2	−5.1
Lumber, 2x4 Pine, per M fbm	108.48	+0.06	−1.4
Cement, bulk, per bbl	4.04	0	+1.0
Sand, per ton	2.340	−1.0	−5.2
Ready-mixed concrete, per cu yd	14.25	−0.1	−0.3
Gypsum sheathing, ½"x2'x8', per Msf*	62.58	0	−1.0
Fiber board sheathing, ½" sq. ed., per Msf*	70.66	0	−4.1
Mineral wool insulation, 3' batts, per Msf*	67.76	+0.1	−1.5
Crushed stone, 1½", per ton, CL	2.702	0	0
Concrete blocks, sand/gravel, 8"x8"x16", each*	0.2263	0	−3.1

Latest Month . . .

	Feb. 1961	Jan. 1961	Feb. 1960
Brick, common per M	40.05	0	−0.2
Lime, hydrated finishing, per ton, CL	40.37	+1.0	+4.0
Structural clay tile, 3x12x12", per M, 2,000 up*	189.43	+0.2	+1.4
Vitrified clay sewer pipe, std 12", per ft	1.356	0	−4.9
Concrete sewer pipe, 12", per ft	1.422	+0.2	+4.0

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1960	**1913=100**	**1949=100**	**1913=100**	**1949=100**	**1913=100**	**1949=100**
Feb	812.73	170.37	555.43	157.89	486	140
Mar	813.26	170.48	555.16	157.81	533	154
Apr	814.78	170.80	555.98	158.04	695	201
May	822.58	172.44	559.57	159.06	610	176
June	826.64	173.29	561.02	159.48	784	227
July	829.33	173.85	562.63	159.93	682	197
Aug	830.18	174.03	562.17	159.80	631	182
Sept	830.92	174.19	562.79	159.98	603	174
Oct	829.58	173.90	561.45	159.60	591	171
Nov	830.09	174.01	561.11	159.50	609	176
Dec	830.61	174.12	561.50	159.61	503	145
1960 Average	**823.55**	**172.64**	**559.43**	**159.02**	**597**	**172**
1961						
Jan	834.32	174.90	562.91	160.01	557	161
Feb	834.27	174.89	562.93	160.02	464	134
Mar	834.16	174.87	562.89	160.01	...	...

First Two Months Lead '60 by 13%

Though heavy construction contracts in February slipped below both January and a year ago, the first two months of 1961 chalked up over $3 billion in awards—13% above the same months last year.

February's $1.36 billion in contracts are off 18% from January's $1.66 billion, partly because of a drop in private industrial building, but largely because of a steep cut in public works, particularly roads, earthwork and public buildings (excluding housing). The setback pulls the month 3% below the $1.40 billion of a year ago.

But February's modest volume is probably a prelude to a strong spring upturn. The Kennedy Administration is putting pressure on public agencies to speed up contracting of public projects, plus some break in the weather should loosen a heavy flow of contracts.

Private projects are already piling up on planning boards. Over $1 billion worth of proposed private construction was recorded in February, marking the third month of a steady rise. Mass housing plans are the largest since last March, when an unusual influx buried drawing boards. Commercial and industrial building plans are sizable.

February private awards of $747 million dipped only 5% below January's $785 million, and only 4% under the $779 million of a year ago. A show of strength in both mass housing and commercial building almost offset the sharp drop in industrial building from January's big bulge. Plant contracts so far are a brisk 32% ahead of a year ago as awards rise to $538 million.

Commercial construction is already well on its way to another record in '61. February added $180 million to January's $138 million, bringing the first two months 13% ahead of last year.

Among public projects, sharp gains over January were scored by sewerage, waterworks and housing. All other categories slipped, from a minor 1% for unclassified to 54% for earthwork projects. But the cumulative scores for the two months still top last year by wide margins for every type of public work except bridges, earthwork and unclassified construction. The key category—highways—is a thumping 51% ahead of last year's sluggish pace.

Best showing regionally for the first two months was in the Mississippi-to-the-Rockies area, where awards were 39% above last year. This region had the biggest volume of new construction, topping $715 million. The South was second with $528 million, 34% above 1960. Only lags were in the Middle Atlantic region, whose $688 million is off 8%; and New England with $152 million, off 8%.

Still No Change in '61 Costs

For the second month in a row, building and construction costs, as measured by ENR's Cost Indexes are practically unchanged.

The 20-cities Construction Cost Index for March is 834.16. Its February value was 834.27. The 20-cities Building Cost Index this month is 562.89, compared with 562.93 a month ago.

Record peaks for these cost barometers, based on 1913 as 100, were set on January 12 of this year, when the Construction Cost Index hit 834.49 and the Building Cost Index reached 563.08.

The cost stability is attributable to an extremely quiet lumber market and to the fact that the 1961 round of new labor negotiations has not yet started.

In recent weeks, lumber price advanced and cuits in ENR's 20-cities have just about cancelled each other out. Dealers in Los Angeles, Cincinnati, Chicago and New York trimmed Douglas fir 2x4 prices $1 to $3 per Mbf this month. But fir 2x4s took a $2 rise in San Francisco and Boston. Southern pine prices were steady in the 20 cities, but Boston dealers marked hemlock 2x4's up $1 per Mbf.

Prices of the other two basic materials measured by the ENR Cost Indexes, structural steel and bulk cement, are unchanged this month.

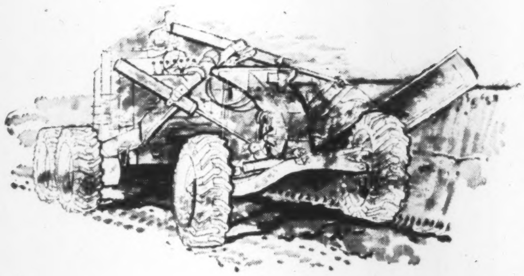
Engineering Construction Contracts for February

	February, 1961								Two months U. S. Cumulative			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total U. S.	% Change '60 to '61	1961	1960	% Change '60 to '61	Canada Feb. 1961
Public Works, Total	**14,064**	**133,523**	**119,560**	**84,661**	**122,286**	**138,992**	**613,086**	**− 2**	**1,488,738**	**1,217,343**	**+22**	**53,062**
Waterworks	179	12,431	4,059	1,687	7,841	5,592	**31,789**	+45	**52,017**	41,913	+24	1,059
Sewerage	358	7,490	13,173	20,100	5,812	11,718	**58,651**	+47	**95,177**	86,058	+11	1,744
Bridges	525	8,185	9,513	7,580	8,178	6,077	**40,058**	−28	**82,994**	100,365	−18	2,200
Earthwork, waterways	253	192	5,139	126	13,743	5,292	**24,745**	−45	**78,843**	102,010	−23	29,036
Streets and roads	4,379	36,333	45,863	16,898	49,459	37,574	**190,506**	− 6	**539,901**	358,242	+51	3,691
Buildings: Residential	1,245	15,201	8,223	12,139	4,875	11,921	**53,604**	+67	**91,985**	83,179	+11	1,810
Other	6,226	26,861	22,213	19,905	20,652	36,418	**132,275**	−13	**383,925**	255,147	+50	9,431
Unclassified	899	26,830	11,377	6,226	11,726	24,400	**81,458**	+12	**163,896**	190,429	−14	4,091
State & Municipal	12,805	123,198	107,963	80,599	96,679	102,716	**523,960**	+ 4	**1,165,003**	923,214	+26	43,583
Federal	1,259	10,325	11,597	4,062	25,607	36,276	**89,126**	−25	**323,735**	294,129	+10	9,479
Private Total	**62,304**	**158,880**	**94,974**	**125,054**	**206,178**	**99,148**	**746,538**	**− 4**	**1,531,452**	**1,449,960**	**+ 6**	**90,143**
Bridges	....	....	....	....	....	....	....	....	....	1,059	−100	....
Buildings: Industrial	28,654	25,629	28,466	18,659	81,655	27,908	**210,971**	− 1	**537,891**	407,473	+32	13,945
Mass housing	21,013	91,050	40,567	54,830	73,398	44,460	**325,318**	−24	**599,302**	685,160	−13	31,612
Commercial	12,144	40,613	16,387	46,018	38,317	26,468	**179,947**	+68	**317,609**	280,799	+13	44,236
Unclassified	493	1,588	9,554	5,547	12,808	312	**30,302**	− 6	**76,650**	75,469	+ 1	350
Total, Feb. 1961 — 4 wks	**76,368**	**292,403**	**214,534**	**209,715**	**328,464**	**238,140**	**1,359,624**	**− 3**	....	....	....	**143,205**
Total, Jan. 1961—4 wks	75,778	395,967	313,750	257,369	386,731	230,971	**1,660,566**	....	....	....	....	112,057
Total, Feb. 1960—4 wks	80,427	406,549	234,680	219,076	270,174	191,337	**1,402,243**	....	....	....	....	95,659
Two Mos. 1961 (8 wks)	**152,146**	**688,370**	**528,284**	**467,084**	**715,195**	**469,111**	....	....	**3,020,190**	....	**+13**	**255,262**
Two Mos.—1960 (8 wks)	181,983	746,396	394,068	421,162	513,321	410,373	....	....	....	2,667,303	....	192,176
% Change '60 to '61	−16	−8	+34	+11	+39	+14	....	....	....	....	....	+33

ENGINEERING NEWS-RECORD *reports continental U. S. construction projects of the following minimum costs—Waterworks, excavation, drainage and irrigation, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.*

Easy shifting at all speeds

With motor graders, ease of operation means a better job. Huber-Warco motor graders are designed to make the operator's job easier. This is one reason for Huber-Warco's significant improvement to the mechanical transmission — constant mesh, including range shift. This means the transmission assembly receives the torque output of a diesel engine and converts it to a wide range of power and speed combinations to suit any grading job. It permits easy and sure shifting at all speeds. By moving only one lever the operator can change direction in the same gear. There are six speeds forward, six reverse; what's more, optional creeper gears mean extra slow speeds. Ball and tapered roller bearings, constant pressure flood lubrication, helical gears, interlocked shift rails are but a few of the many other features you get with Huber-Warco constant mesh transmission. For real operator satisfaction, peak performance and efficiency, for every grading job, why not talk to your Huber-Warco distributor soon?



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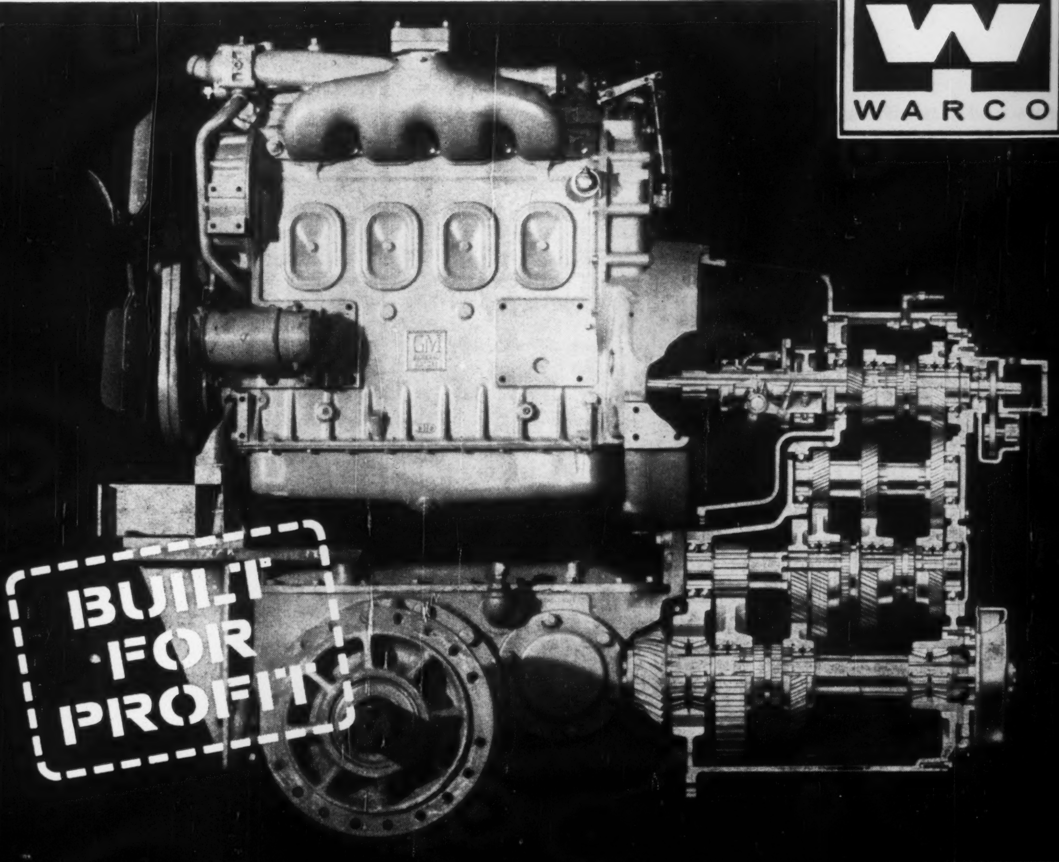
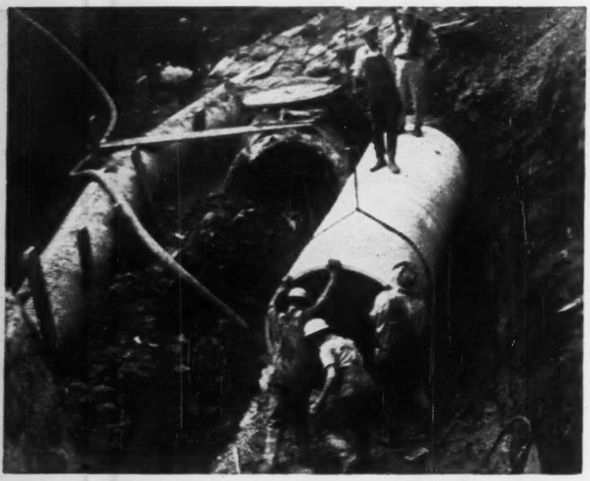


In KNOXVILLE, TENNESSEE

TYLOX Rubber GASKETS, REXON Rubber GASKETS, and REXON PIPE COATING



PREVENT JOINT LEAKS, WHIP ACID ATTACK AND SPEED PIPE LAYING ON STORM-SANITARY SEWER PROJECT

Engineers and city officials went "Hamilton Kent" all the way, in the matter of selecting *leak-proof* pipe joints and *acid-resistant* pipe coating to protect Knoxville's new Riverfront-Willow Avenue sewerage and drainage project . . .

Heavy duty precision TYLOX Gaskets coupled the large diameter T & G concrete storm lines. REXON "K" Light Duty Gaskets jointed the smaller diameter B & S sewer lines, and tough, non-deteriorating REXON No. 2 Pipe Coating put a protective covering inside all lines that would serve nearby stockyards, butchering plants and other industrial installations.

In specifying Hamilton Kent TYLOX and REXON *rubber* Gaskets, and REXON Pipe Coating, engineers and city officials not only provided to the utmost for the safety and long life of the system, but made possible substantial savings in construction costs . . . Both TYLOX and REXON Gaskets are quickly assembled to pipe, and permit fast assembly of the line. Their flexible, *compression* seal compensates for pipe angularities, allows wet trench coupling, and immediate backfilling.

- **WRITE FOR BROCHURES** describing and illustrating use of Hamilton Kent TYLOX and REXON Gaskets and REXON Pipe Coating. Specify these products to protect **your** pipe projects from leakage and acid attack.

* **PROJECT**: For City of Knoxville, Tenn., Riverfront-Willow Ave. storm and sanitary sewers.

ENGINEERS: H. R. Neal, City Engineer, and Roy I. Gentry, Service Director.

CONTRACTORS: Division A—Harrison Construction Company, Alcoa, Tenn. Division B—Blont Brothers Construction Company, Montgomery, Ala.

PIPE: T & G and B & S Concrete Pipe, manufactured by Sherman Concrete Pipe Company, Knoxville, Tenn.

5089

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Teamsters Win Monitor Battle

- **Federal court authorizes convention, election of officers, dissolution of board of monitors.**
- **Judge Letts apparently thinks the new labor law adequately protects rights of members.**

James R. Hoffa last week won the right to become undisputed leader of the teamsters union and the right to run the union the way he thinks it ought to be run—rights he has never had since his election to the union's presidency in October 1957.

His victory emerged out of a tangled mass of litigation when Federal Judge F. Dickinson Letts signed a series of orders that abolished immediately the board of monitors, imposed by the court for the house cleaning proposed in 1958, and that authorized the teamsters union to hold a new convention for the election of officers.

When the convention, tentatively set for early summer, is held, Mr. Hoffa is expected to be reelected president, thus shedding the title of "provisional president."

The results, however, are apt to be overexaggerated. Mr. Hoffa, it is true, will be able to strengthen his position by removing the cloud on his title and he will for the first time be free from the time-consuming, costly and harassing results of a system of overseers that never really worked.

But when the last tie of court supervision has been cut, Mr. Hoffa will still be under the restraining influence of the Landrum-Griffin labor law and he will still be outside of the AFL-CIO. Except for giving the intangible advantages that may normally flow from strengthened leadership, the court actions of last week can do little to shape or reshape Mr. Hoffa's organizing or bargaining goals, which were never within the jurisdiction of the monitors.

In fact, Judge Letts appeared to base his decision abolishing the monitors and allowing a new convention mainly on the belief that the Landrum-Griffin law, passed in 1959, now provides an effective remedy for all of the charges of corruption and mismanagement originally brought against the union.

Attorneys for the insurgent teamsters, who originally contested Mr. Hoffa's election as rigged, still have some hope of blocking a new convention. They are considering appealing Judge Letts' new orders on two counts:

- They contend that no convention should be held until teamster locals currently in trusteeship by the international have been properly released from trusteeship.
- And they contend that Judge Letts should not allow the payment of the fees of teamster lawyers out of teamster funds. (The court denied an insurgents' request that their lawyers be paid out of union funds.)

The teamsters currently have 45 local unions under trusteeship but have already started the process of removing them from international control. By mid-March, a teamster spokesman said, all of the locals should be out of trusteeship and in the hands of newly elected officers.

Edward Bennett Williams, teamster lawyer, said the trusteeship issue is of little moment because the problem falls within the jurisdiction of the Landrum-Griffin law. Judge Letts agreed.

The attorney for the insurgents, Seymour J. Spelman, indicated he might try to get a Court of Appeals stay of a convention call. But even if this failed, he suggested that the legal points he has raised may provide the basis of future court action against Mr. Hoffa.

'Cargo' Ban May Be Complete

Labor board decisions cast doubt on validity of clauses designed to get around hot-cargo ban

Employers and unions in all industries were warned by the National Labor Relations Board last week that the board has no intention of allowing easy evasion of the Landrum-Griffin ban on hot-cargo clauses in labor contracts.

In the most significant decision on the issue to date, the board said it will seek to enforce the spirit of the law as well as its literal language and in doing so will look for "every possible subterfuge" devised to get around the law.

Under the law, unions and employers are forbidden to make any agreement, express or implied, by which the employer agrees to cease handling the products of, or to cease doing business with, any other person. The law was designed to plug one of the loopholes that had been found in the secondary boycott provisions of the old law.

The board's announcement of last week came out of two lithographer cases—one in California and one in Florida. In those cases, the union was trying to get contract clauses that would allow the union to demand renegotiation of the labor contract if union members were asked to handle material from nonunion or other shops that met with the union's disapproval. In effect, this would have given the union the right to strike to enforce a demand that the Landrum-Griffin law prohibits.

The board took the position that the clause was merely a ruse to achieve an unlawful end and said the net result would amount to an employer agreement not to handle "hot-cargo" materials or products.

Similar efforts to minimize the impact of the ban have been under way in the construction industry. Among the alternatives that have been used, for example, is a clause reserving to union members the right to refuse to handle certain products. And the teamsters have tried a clause that prevents an employer from penalizing drivers who refuse to handle hot cargo.

Although the new decision has thrown all these clauses into deeper shadows of doubt, the final decision is still up to the courts.

In the meantime, unions and employers who engage in a "planned effort of draftsmanship" to evade the law run the risk of being served with unfair labor practice complaints. Unions now have little chance to strike to get such clauses. And they probably cannot enforce those they do get because the law makes them "unenforcible and void."

Nation-wide Pact

Painters and NCA members sign new labor contract

The first nation-wide collective bargaining agreement covering painting work in the construction industry has been signed by the painters international union and member companies of the National Constructors Association.

The agreement covers sign-painting and paint-making on construction projects as well as painting, decorating and coatings.

Under the agreement, the union agrees to furnish men directly to signatory companies; the companies agree to pay wage rates and to recognize working conditions established by local collective bargaining contracts. The agreement contains specific bans on strikes and lockouts and sets up a National Joint Trade Board to settle disputes that cannot be resolved locally.

L. M. Raferty, general president of the painters union, last week called the agreement a milestone in the history of labor relations in the painting industry. He predicted that it would promote the contract method of construction and provide additional work for members of the union.

The agreement does not impinge on the industry's present method of handling jurisdictional disputes. It provides that there will be no work stoppages or slowdowns because of jurisdictional disputes and calls for the use of the National Joint Board procedure in the settlement of such disputes.

The National Joint Trade Board, which the contract establishes, will be composed of union officials and representatives of NCA. The board is expected to meet periodically and is empowered to consider all industry problems of mutual interest.

In pointing out the advantages of the new contract to NCA members, the association's president, H. E. Lore, said the agreement should improve the service signatory companies can give their clients. He noted the protection the contract affords against strikes due to local labor disputes and said the union's commitment to furnish men to signatory contractors should improve efficiency on large industrial construction projects by making possible a closer coordination of all phases of the work under a single project management.

National labor contracts are not new to NCA, which is a group of internationally known firms engaged in the design and construction of industrial plants. It has negotiated such agreements with nearly all the major international building trades unions.

Labor in Brief . . .

• **Minimum wage**—Reaching a halfway point in its consideration of the minimum wage bill, the House Labor Committee last week voted to raise the minimum to $1.25 an hour over a two-year rather than a three-year period. Coverage was still under discussion. A final bill is expected to emerge this week.

• **Automation**—One of the ideas advanced at a labor-sponsored Conference on Automation in Los Angeles last month was that unions begin to think in terms of a "guaranteed income" instead of in terms of X dollars for Y hours of work. Delegates were told that automation could produce the worst unemployment crisis in history and were urged to take protective action on both the bargaining and legislative fronts.

• **Protection for the older worker**—A labor contract clause requiring that one of every four carpenters hired be over 60 years of age is one of the bargaining demands submitted to the Toronto Builders' Exchange by the Toronto District Council of Carpenters. The union also wants to reduce the workweek from 40 to 35 hours, get a 45-cent wage increase and have only union members hired as foremen.

• **Unemployment compensation** — Unemployed workers who have exhausted their state benefits are in line for additional benefits for periods up to 13 extra weeks under a bill passed by the House last week. The tax on employers would be raised from 3.1% to 3.5% during 1962 and 1963 to finance the payments. Senate hearings are scheduled for this week.

• **Davis-Bacon** — The Davis-Bacon Act, which calls for payment of prevailing wages on Federal construction projects, would be inoperative whenever the Fair Labor Standards (Minimum Wage) Act applies, under a bill introduced in Congress by Edgar W. Hiestand (R., Calif.). Mr. Hiestand said Congress had met its responsibility for labor standards through the FLSA.

• **Top drawer advice**—David S. Turner, secretary-treasurer of the sheet metal workers union, recently said: "Employment is not a one way street. We are not on the job for just getting—we've got to do a little giving—and by giving I mean we must give 'value received' for our hourly wages. Labor has responsibilities as well as rights—let's never forget that."

Big Fund Helps Apprenticeship

More than two and a half million dollars has been contributed over the last few years by the International Training Fund for the training of apprentices and journeymen in the plumbing and pipefitting industry.

Last month, the trustees of the ITF approved 29 grants to joint apprentice and journeymen training committees in the U.S. and Canada. The grants totaled $197,224, bringing the grand total of awards to date to $2,675,146.

The ITF was created in 1956 under a national labor agreement between the United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry, AFL-CIO, and members of the National Constructors Association.

The fund, whose impact is felt at the local level, provides financial assistance where needed to strengthen, improve and even to establish approved UA training programs that are jointly administered by local contractors and UA local unions. The awards have been put to a variety of uses, including payment of instructors' salaries, the purchase of textbooks, training tools and equipment.

So far, the ITF has made financial grants to 269 different training programs. And 53 of these are two-time recipients of fund awards.

Those who formed the ITF claim it is the first national trust of its kind. By supplementing local training programs, they note, the ITF makes all contractors, national and local alike, its beneficiaries.

The money in the fund comes from employer contributions. NCA members who are parties to the national agreement contribute 2½ cents an hour for each hour of work performed by UA journeymen and apprentices in their employ. Under an escalator clause to protect the fund's reserve, the contribution can move from time to time to three cents an hour.

The fund has 10 trustees—five from the NCA and five are from the UA. James P. Schoemann has been administrator of the ITF since its inception.

Bids: March 29, 1961

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 29th day of March, 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, Act. District Engineer, 353 Broadway, Albany 1, New York						
Essex, Clinton, (Rtes 9 & 86)	R.C. 61-18	Jay-Lake Placid. Pt. 1, SH 5540 (Br. No. 1) Plattsburg-Ausable Chasm, Pt. 2, SH 5311 (Br. No. 2)	0 15	Repair to Bridges	$1,000 Plans $5	$17,000
Sara.	P.A. 61-1	Geyser Creek Picnic Area (Saratoga Springs Reservation)	0 36	Grading, Paving, Water Supply Drainage & Misc. Work	$2,800 Plans $5	51,000
Warren (Int. Trg. Rte. 87)	FISH 61-3	Interstate Rte. 502 (Gurney Lane to Luzerne Road) Proj. I-87-3(37)	3 57 (3 28 Acc.)	9″ Cem. Conc. Pavt. 2 @ 24′ Var.=3.24 Mi. Misc. Work=0.33 Mi. Acc.-1.47 Mi. Cem. Conc. Pavt.; 0.38 Mi. Asph. Conc.; 1.43 Mi. Bit. Treat. Fdn. Course; 2 Hgs. Comp. WF Beam Brs. 3 Sps. 159′ TOT; 3 Sps. 213′ TOT.	$227,000 Plans $5	3,953,000
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Fulton, Herkimer (Rte. 29)	R.C. 61-29	Oppenheim-Dolgeville SH 5626 (Over East Canada Creek) Bridge No. 1	....	Cleaning and Painting Bridge Thru Truss—1 Span 182′	$190 Plans $5	3,250
DISTRICT No. 3, E. E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Cort. (Rte. 13)	R.C. 61-20	Cortland-Truxton, S.H. 738	5 01	Asphalt Concrete	$12,000 Plans $5	$206,000
Onon. (Int. Trg. Rtes. 690, 81)	FITS 61-9	Interstate Rte. Conn. 570 (State Fair Boulevard) FAC 56-8P (Northwest Art. Conn.) FASH 56-6P Interstate Rte. 505 (Nedrow-Lafayette) FISH 56-12 (Lafayette-Tully) FISH 56-11 Proj. I-690-3(8); I-81-2(55)	13 68 (6 85 Acc.)	Traffic Signs and Delineators	$11,000 Plans $5	192,000
Onon. (Int. Trg. Rte. 81)	R.C. 61-35	Interstate Rte. 505 (Mattydale-Brewerton, FASH 57-6)	0 15	Roadside Development	$300 Plans $5	5,000
Oswego (Rte. 69)	R.C. 61-6	Parish-Camden, Pt. 1, SH 5526	2 27	Asphalt Concrete	$15,000 Plans $5	265,000
Seneca (Rte. 96)	FARC 61-30	Waterloo Village (Fayette St.) SH 1399, Waterloo Vill. SH 1211 Waterloo Vill. SH 1211A Proj. F-626(7)	0 47	Asph. Conc. Widen. Brs. Br. No. 1 I-Beam, 1 Sp. 73.5′ C. to C. of Bear. Br. No. 2 Prestress. Conc. 3 Sps. 86′ TOT. Br. No. 3 Prestress. Conc. 2 Sps. 100′ TOT.	$25,500 Plans $5	463,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester, 1 New York						
Liv. (Rte. 15A)	R.C. 61-26	Hemlock-Lima, S.H. 1951	5 87	Asphalt Concrete	$31,000 Plans $5	550,000
Mon. (Rte. 104)	R.C. 61-23	Little Ridge, Part 5, S.H. 760	3 85	Asphalt Concrete	$20,000 Plans $5	358,000
Mon. (Rte. 260)	R.C. 61-21	Sweden-Walker, S.H. 1391	6 18	Asphalt Conc.=5.98 Mi. Misc. Work=0.20 Mi.	$25,000 Plans $5	449,000
Mon. (Rte. 33)	R.C. 61-27	Buffalo, Pt. 5, S.H. 634	2 11	Asph. Conc.=2.00 Mi.	$8,000 Plans $5	136,000
Ont. (Rtes. 96, 251)	R.C. 61-28	Pittsford-Victor, Pt. 2, S.H. 8223; Victor-Mendon, Pt. 1, S.H. 335	2 57	Asph. Conc.=2.54 Mi. Misc. Work=0.03 Mi.	$10,000 Plans $5	177,000
Wyom. (Rte. 78)	FARC 61-2	Java Center-Waldo Cors.-Smith Corners, S.H. 1716 Java Center-Java Village, S.H. 894 Proj. F-1158(2)	5 95	Asph. Conc.=5.81 Misc. Work=0.14	$43,000 Plans $5	792,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Erie	SCE 61-1	Scajaquada Creek Expressway (Niagara St. to Delaware Ave.)	1 91 (1 95 Acc.)	Roadside Development	$3,500 Plans $5	64,000
Erie (Rte. 20A)	FARC 61-5	Orchard Park-East Aurora, S.H. 1066 Proj. F-1054(5)	5 02 (0 12 Acc.)	9″ Cem. Conc. Pavt.=5.03 Mi. Misc. Work=0.11 Mi.	$85,000 Plans $5	1,500,000
Niag. (Int. Trg. Rte. 190 & Rte. 18)	FINIE 61-1P FARC 61-33P NIE 61-2P	Interstate Rte. 506 (Niagara Expressway) Contract 3 Suspension Br.-Lewiston, S.H. 475, Access "Ramp L" (Relocation of Lewiston Rd.) Proj. I-190-1(38), U-461(13)	0 86 (2 09 Acc.)	9″ Cem. Conc. Pavt.=0.41 Mi. Grading, Misc. Work=0.45 Mi.; Access=1.86 Mi. Cem. Conc; 0.07 Mi. Asph. Conc.; 0.16 Mi. Grading & Misc. Work Comp. I-Beam Struct. 4 Sps. 279′ TOT.	$85,000 Plans $5	1,542,000
Niag. (Int. Trg. Rte. 190)	FINIE 61-3	Interstate Route 506, Niagara Expressway—Cont. 4 (Gill Creek to Cemetery Rd.) Proj. I-190-1(39)	2 04 (0 98 Acc.)	Cem. Conc. Pavt.=1.96 Mi. Misc. Work=0.08 Mi. Access=0.59 Mi. Cem. Conc; 0.39 Mi. Asph. Conc. Hgs No. 9, 2 Comp. I-Beam Brs., 1 Span @ 75.1′, 1 Sp. @ 75.1′ Hgs No. 8, Rehabilitating Bridge	$132,000 Plans $5	2,400,000
DISTRICT No. 6, WM. J. DENNIS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben (Rte. 432)	FARC 61-24	Addison-Rathbone, SH 1598 Proj. S-580(1)	0 76	Asph. Conc.=0.63 Mi. Misc. Work=0.13 Mi. Br. No. 1 Twin Reinf. Conc. Closed Box, 23.1′ Span	$11,000 Plans $5	199,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clint., Essex (Int. Trg. Rte. 87)	FISH 61-8	Interstate Rte. 502, Sects. 7A1 and 7A2, (Rte. 9 to Rte. 22) Proj. I-87-4(18)	2 76 (1 79 Acc.)	Asph. Conc. Type 1A 1-Hgss Comp. Beam, 4 Sps. 227.2′ TOT., 2 Brs. Welded Steel Plate Girder, 3 Sps. 319′ TOT. 5 Hgss Prestress. Conc., 3 Sps. 139.4′ TOT., 3 Sps. 151.3′ TOT., 3 Sps. 121.8′ TOT., 3 Sps. 121.8′ TOT., 6 Sps. 351.3′ TOT.	$220,000 Plans $10	4,033,000
Jeff. (Rte. 11)	R.C. 61-19	Watertown-Philadelphia, Pt. 1C, S.H. 5681, Watertown-Phila. Pt. 2, S.H. 5617	2 20	Asphalt Conc. Type 1A	$3,400 Plans $5	62,000
DISTRICT No. 8, K. C. RAUER, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York						
Rock., Orange	SLP 61-1	Seven Lakes Parkway (Sloatsburg to Kanawauke Circle)	6 34	Asphalt Concrete 2 Brs., Comp. I-Beam 1 Sp 68.15′, 1 Sp. 48.31′, Alterations to Dam Bridge	$147,000 Plans $5	2,672,000
Ulster (Rte. 28)	FASH 61-9 FARC 61-32	Kingston By-pass Pt. I (Route U.S. 209 to Rte. N.Y. 28) Kingston-West Hurley, S.H. 5173 Proj. F-FG-U-395(7), F-1009(5)	5 40 (1 73 Acc.)	9″ Cem. Conc. Pavt. (Main Line)=4.57 Mi. Cem. Conc. Pavt. (Ramps)=1.47 Mi. Asph. Conc.=0.76 Mi., Bit. Dble Surf. Treat.=0.26 Mi. Misc. Work=0.07 Mi., 2 Hgss Comp. I Beam, 1 Sp. 78.4′, 4 Sps. 226.80′ TOT.; Welded Plate Gird. Br., 2 Sps. 275′ TOT.	$260,000 Plans $5	4,560,000
West.	SBP 61-1	Sprain Brook Parkway Tuckahoe Road to Jackson Ave.	2 60 (3 45 Acc.)	8″ Cem. Conc.=2.54 Mi., Misc. Work=0.06 Mi. Access=0.65 Mi. Cem. Conc. and 2.80 Mi. Asph. Conc.; Reinf. Conc. Closed Box Culvert WF Comp. Beam, 1 Sp. 52.5′ Retaining wall	$220,000 Plans $5	4,092,000
West. (Int. Tr. Rte. 287)	FICWETC 61-1	Int. Rte. Conn. 520, Cross Westchester Expressway Project I-287-2(21)	...	Traffic Signals	$7,000 Plans $5	123,000
West. (Rte. 9)	R.C. 61-17	Broadway-Mt. Pleasant, S.H. 9206; Briarcliff Manor Village, SH 5361; Ossining-Croton River, SH 5364A; Ossining Village, S.H. 5482	3 35	Asphalt Concrete	$13,000 Plans $5	224,000
DISTRICT No. 10, A. M. SARR, District Engineer, 325 W. Main Street, Babylon, L.I., New York						
Kings. (Int. Trg. Rte. 278)	FIGE 61-1	Interstate Rte. Conn. 512 Gowanus Expressway-Cont. 3 (2nd. Ave. to 20th St. Incl. Prospect Expressway Inter-Change) Proj. EI-278-1(60)	0 66 (0 31 Acc.)	Main Line: Reinf. Conc. Slab-Roadway (Struct.)= 0 30 Mi.; Grade Drain. & Misc. Work=0.36 Mi, Surf. Sts. Grade. Drain, & Misc. Work=0.31 Mi. Incl. Elev. Structure & Prospect Exp. Inter.	$350,000 Plans $10	6,458,000
Nassau (Rte. 25)	FARC 61-31	Jericho Turnpike, SH 9020 Mineola Village-Jericho Turnpike, SH 1785 Mineola Village-Jericho Turnpike, S.H. 8493 Mineola Village- Jericho Turnpike, SH 1785A Proj. U-1000(10)	2 40	Asph. Conc.=1.97 Mi., Misc. Work=0.43 Mi. Traffic Signs & Signals	$92,000 Plans $5	1,665,000
Nassau, Suffolk	FALIETS 61-1	Long Island Expressway-Cont. 7A (So Oyster Bay Road to Nassau Suffolk County Line) Proj. U-862(31)	3 61 (4 04 Acc)	Traffic Signs	$6,500 Plans $5	118,000
Nassau, Suffolk	FALIETC 61-2	Long Island Expressway, Cont. 8A (Nassau-Suffolk Co. Line to Deer Park Ave., FALIE 60-1, FALIE 60-2) Proj. U-862(33)	6 04 (9 78 Acc.)	Traffic Singals, Signs and Delineators	$8,000 Plans $5	144,000
Nassau	NSPRC 61-2	Northern State Parkway (N.Y.C. Line to Long Island Expressway)	5 24	Asphalt Concrete=5.10 Mi. Misc. Work=0.14 Mi.	31,000 Plans $5	562,000
Nassau, Suffolk	O.P. 61-2	Ocean Parkway (Meadowbrook State Parkway-Captree State Parkway)	15 37	Shoulder Widening and Landscaping=14.83 Mi. Misc. Work=0.54 Mi.	30,000 Plans $5	502,000

(Continued on page 128)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner, of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

Bids: March 16, 1961

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N.Y.—Pursuant to the provisions of the Highway Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 16th day of March 1961, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles
DISTRICT No. 10, A. M. Sarr, District Engineer, 325 W. Main Street, Babylon, L. I., New York			
New York (Int. Trg. Rte. 78)	FILME 61-1	Interstate Route Conn. 513 Lower Manhattan Expressway (Expressway Structure under Chrystie Street) (Contract No. 1) Project EI-78-1 (43)	0 03

Type	Deposit	Estimated Cost of Work
Abutments, Piers and miscellaneous work to support subway structure across depressed roadway	$63,000 Plans $5	$1,137,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
Supt. of Public Works

Bids: March 28, 1961

City of Hazleton

NOTICE TO CONTRACTORS

The City of Hazleton will receive sealed Proposals for the extension of an existing runway and for the expansion of an existing terminal apron upon its Municipal Airport in Hazle Township, Luzerne County, Pa. Proposals will be received by the undersigned until 7:30 P.M. (E.S.T.) March 28, 1961 at the office of the City Clerk, City Hall, Church Street, Hazleton, Pennsylvania, and will be publicly opened after 8:00 P.M. (E.S.T.) of the same day.

Copies of the Plans, Specifications and Proposal Forms can be obtained at the office of G. Edwin Pidcock Co., Consulting Engineers, 126 North Ninth Street, Allentown, Pa., upon payment of Forty Dollars ($40.00) for each set. Any Bidder, upon returning such set in good condition within ten (10) days after the opening of the Proposals, will be refunded Twenty-Five Dollars ($25.00) of his payment.

The work under this contract shall be done in accordance with the "Standard Specifications for Construction of Airports" (Federal Aviation Agency) as published by the United States Government Printing Office in June 1959. Copies of these Specifications can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., at a price of $2.75 each.

Each Bidder must deposit with his Proposal, a certified check or surety company's bid bond in an amount of not less than five (5) percent of the Total Bid as defined in the Instructions to Bidders.

Proposals must be submitted in duplicate on the prescribed forms provided and in accordance with the Instructions to Bidders. No Bidder may withdraw his Proposal within thirty (30) days after the actual date of the opening thereof. The City of Hazelton reserves the right to waive any informalities in, or to reject any or all Proposals, or portions thereof.

The minimum wages paid all labor employed on this project shall be as tabulated in the Specifications and as approved by the Secretary of Labor of the United States.

S. Thomas Capparell
Mayor, City of Hazleton
John H. Bigelow, Solicitor

Bids: March 29, 1961

For Construction of Industrial Waste Treatment Facilities For The City Of Walla Walla, Washington

Notice to Contractors

Sealed Proposals will be received at the office of the City Clerk until 3:00 P.M. PST on Wednesday the 29th day of March 1961, for the construction of Industrial Waste Treatment Facilities for the City of Walla Walla, Washington. Immediately thereafter said Proposals will be publicly opened and read. A contract will be awarded or bids will be rejected within forty-five (45) days after the opening.

The work consists of construction of an 8.0 mgd industrial waste treatment facility to be operated in conjunction with the existing sanitary sewage treatment plant.

The contractor for the work shall furnish all materials, labor, tools, equipment specified and services required to complete the work in accordance with the plans and specifications therefor.

Plans and specifications may be examined and obtained at the offices of Stevens & Thompson, Consulting Engineers, 2234 S. W. Fifth Avenue, Portland 1, Oregon.

Prospective bidders must qualify as required by Part I of the specifications. Prequalification blanks may be obtained from the engineers for bidders may use the regular AGC form for such purpose.

Copies of said plans and specifications may be obtained upon application to the engineer accompanied by a deposit of $50.00 for the first set and $25.00 per set for each additional set of plans and specifications. The deposit for the first set will be refunded in full to any depositor who submits a bona fide bid as a general contractor and returns the plans within ten (10) days after the bid opening or who returns said plans and specifications in good condition within ten (10) days after receiving them, otherwise only one-half of the said deposit will be refunded when the documents are returned. For additional sets after the first only one-half of the original deposit of $25.00 will be refunded when the documents are returned provided they are returned within ten (10) days after the bids are opened.

All proposals must be submitted on the regular forms furnished with the specifications and each must be accompanied by cash, certified check, or bid bond in an amount not less than five per cent (5%) of the total bid. A corporate surety bond in the full amount of the contract will be required to guarantee its faithful performance.

The City of Walla Walla reserves the right to reject any or all bids, waive informalities or to accept the lowest acceptable bid.

BY ORDER OF THE CITY COUNCIL
CITY OF WALLA WALLA,
WASHINGTON

District of Columbia—Sewer Construction—Dept. of Sanitary Engineering, D. C., Feb. 28, 1961. SOUTHWEST INTERCEPTOR (SECTION I) and MAINE AVE. INTERCEPTOR (SECTION I) STORM AND SANITARY SEWERS, 3rd and O Sts., S.W., between Canal St., S.W. and L St., and from 3rd and N Sts. to 6th and K Sts., S.W., consisting of approx. OPEN CUT CONSTRUCTION: 1,955 lin. ft. 42"; 1,890 lin. ft. 36"; 290 lin. ft. 21"; 65 lin. ft. 18" dia. reinforced concrete pipe sewer; 25 lin. ft. 15" dia. reinforced concrete sewer pipe drainage structure connection; 750 lin. ft. 12" dia. vitrified clay pipe sewer; 1 junction chamber; and 12 reinforced concrete manhole bases. TUNNEL CONSTRUCTION: 175 lin. ft. 42" and 185 lin. ft. 36" dia. reinforced concrete pipe sewer (Invitation No. C-6176-S). Wage rates have been predetermined by the Labor Dept. Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Room 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer, (Phone NA 8-6000, Ext. 448). SEALED BIDS to be opened 3:00 PM, EST, Mar. 28, 1961, in Rm. 424, 499 Pa. Ave., N.W.

Read the Official
Proposal Columns of
ENGINEERING NEWS-RECORD
This Week and Every Week

OFFICIAL PROPOSALS

Bids: March 16, 1961

Round Valley Reservoir Project South Dam and Tunnel and North Dam, Dike and Relocated Road and the Appurtenant Works Contracts RV-1 and RV-2

SEALED BIDS will be received from bidders by the Department of Conservation and Economic Development, at its offices, first floor, 205 West State Street, Trenton, N. J. at 11:00 A.M. Eastern Standard Time on March 16, 1961 and will be opened and read immediately thereafter for the following two contracts for the construction of the south dam and tunnel and the north dam and dike, all as set forth in the specifications. The work is located near the Borough of Lebanon, in the Township of Clinton, Hunterdon County, New Jersey.

Contract RV-1 is for the construction of the south dam of earth compacted by rolling with provisions for a future increase in the height of the dam which initially will be 1400 feet in length along the top and have a maximum height of about 175 feet. The foundation under the impervious core will be grouted to provide a tight seal. A short intake tunnel with a shut-off tower will be located in the west abutment of the dam.

Contract RV-2 is for the construction of the north dam and dike of earth compacted by rolling with provisions for a future increase in the height of these structures which initially will be 1460 and 2335 feet in length along the top, with maximum heights of 125 and 76 feet, respectively. The rock foundation under the impervious core will be grouted to provide a tight seal. Included in the contract are a portion of the relocated road and outlet conduits and works.

A bidder on both these contracts may, if he desires, specify in the bid form of either or both contracts that he will agree to make a percentage reduction from the total cost of the contract, if both contracts are awarded to him. Bids will be accepted from bidders prequalified with the Department of Conservation and Economic Development in accordance with R.S. 52:35.

A separate bid for each of the two contracts, each accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey in an amount not less than 2 percent of the bid, an Agreement of Surety, an Affidavit of Non-Collusion, the name and address of the prequalified subcontractor to do the grouting, drilling, core boring and sampling, an Appointment of Agent by Non-resident Bidders and revised Financial Statment and Plan and Equipment Statement on prequalification forms, must be enclosed and sealed in separate envelopes provided for that purpose by the Department. Bids not so submitted may be rejected. Bids must be delivered at the above place on or before the hour named, as no bids will be accepted after the hour specified.

Contract pamphlets for each of the two contracts containing information for bidders, forms of bid and contract, specifications, requirements as to surety and subcontractor for grouting etc., and separate folders of contract drawings can be obtained in the office of the Chief Construction Engineer of the Bureau of Design and Construction of the Division of Water Policy and Supply of the Department of Conservation and Economic Development, 32 East Hanover Street, Trenton, N. J., upon application in person or by mail, by depositing the sums of $15.00 for each contract pamphlet and $10.00 for each folder of contract drawings, and to cover the cost of mailing of one contract pamphlet and one folder of drawings, the additional sum of $5.00 per each set. All checks shall be drawn to the order of the Treasurer of the State of New Jersey. The deposit for the contract pamphlet will be refunded within 30 days of the award of contract upon the return of such document in good condition without written entries. Deposit will not be refunded for the folder of contract drawings. For further particulars apply to the office of the Chief Construction Engineer.

The Commissioner reserves the right to select the bids, the acceptance of which will be most advantageous to the State, price and other factors considered. Any and all bids may be rejected when the Commissioner determines that it is in the public interest so to do.

Salvatore A. Bontempo
Commissioner of Conservation
and Economic Development

OFFICIAL PROPOSALS

Bids: March 24, 1961

Delaware Memorial Bridge Repainting Steelwork

DELAWARE INTERSTATE HIGHWAY DIVISION
CONTRACT NO. 44
NOTICE TO BIDDERS

Sealed proposals for repainting steelwork on the portion of the Delaware Memorial Bridge from the west abutment to the west tower, exclusive of the tower, cables and suspenders, at New Castle, Delaware, will be received by the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge, near Wilmington, Delaware, until 11:00 A.M., Eastern Standard Time, on March 24, 1961 at which time and place said proposals will be opened and read.

Repainting shall consist of cleaning metal surfaces, spot-priming where necessary, and applying one (1) finish coat of paint to all exposed metalwork.

The approximate weight of steelwork to be painted is 10,350 tons.

Work on this project shall begin within ten (10) days after the execution of the Contract and shall be completed on or before October 1, 1961.

Monthly payments will be made for ninety (90) per cent of the work completed each month.

Bidders must submit proposals upon forms provided by the Division.

Each proposal must be accompanied by an acceptable surety bond, certified check or cash in the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within thirty (30) days from the date of opening proposals. The right is reserved to reject any or all bids.

One set of the contract documents may be obtained from the Delaware Interstate Highway Division at the Administration Building, Delaware Memorial Bridge near Wilmington, Delaware, after March 3, 1961, upon payment of $10.00. Contract documents need not be returned and the above payment will not be refunded. Checks shall be made payable to Howard, Needles, Tammen & Bergendoff.

Delaware Interstate Highway Division
By: J. H. Tyler McConnell, Director
Richard A. Haber, Chief Engineer
Delaware Interstate Highway Division
March 3, 1961.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5525) will be received at Hardin, Montana, until 3 p.m., Mountain Standard Time, April 11, 1961, for furnishing labor and materials for Yellowtail Dam and Powerplant, Yellowtail Unit, Wyoming, Lower Bighorn Division, Missouri River Basin Project. Location 45 miles southwest of Hardin, Montana. Principal items are 1,509,000 cu. yd. excavation; 7,477,000 lbs. of furnishing and placing reinforcement bars; 1,770,500 cu. yds. of concrete; 931,000 lbs. of furnishing and placing permanent structural steel tunnel supports; 1,050,000 barrels of cement; and other work. Completion time 1,980 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box E, Hardin, Montana; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5534) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, April 4, 1961, for furnishing labor and materials for stringing conductors and overhead groundwires for Oahe-Fort Thompson 230-kilovolt Transmission Line and Oahe Switchyard approaches, and 115-kilovolt switchyard approaches, Transmission Division, South Dakota, Missouri River Basin Project. Location in Hughes, Hyde and Buffalo Counties, South Dakota. Principal items are 55.95 miles of line—Furnishing and stringing six 954,000 circular-mil ACSR conductors; 2.34 miles of line—Furnishing and stringing six 795,000 circular-mil ACSR Conductors; and other work. Completion time 390 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5536) will be received at Paonia, Colorado, until 10 a.m., Mountain Standard Time, April 4, 1961, for furnishing labor and materials for Earthwork and Structures, Flume Replacements for G3-52 and G4-02 East Canal, Uncompahgre Project, Colorado. Location near Delta, Colorado, in Montrose County. Principal items are 28,200 cu. yds. excavation; 44 cu. yds. concrete; and other work. Completion time 215 days. For particulars, address Bureau of Reclamation, P. O. Box 346, Paonia, Colorado, P. O. Box 360 Salt Lake City, Utah, or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5526) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, March 30, 1961, for furnishing labor and materials for Second Circuit Additions to Watertown, South Dakota-Granite Falls, Minnesota, 230-Kilovolt Transmission Line, Transmission Division, Missouri River Basin Project. Location in Codington and Deuel Counties, South Dakota; and Lacqui Parle, Chippewa, and Yellow Medicine Counties, Minnesota. Principal items are 72 miles of line—furnishing and stringing three 954,000-circular mil 54/7 ACSR conductors; 3,201 dampers—furnishing and attaching vibration dampers to 954,000 circular mil ACSR 54/7 conductors; and other work. Completion time 240 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5537) will be received at Ephrata, Washington, until April 6, 1961, for furnishing labor and materials for Potholes Canal Enlargement Station 6+95 to Station 23+00 and Station 402+00 to Station 471+00, Columbia Basin Project, Washington. Location Grant and Adam Counties, Washington. Principal items are 138,000 cu. yds. excavation for canal; 315 cu. yds. concrete; Lump sum, constructing gaging station; and other work. Completion time by March 15, 1962. For particulars, address Bureau of Reclamation, P. O. Box 937, Boise, Idaho; 735 East Main, Othello, Washington; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

CONTRACTORS
WATCH
THIS SECTION

for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

U. S. Government

(Continued from preceding page)

Sealed bids for construction of Facility No. 500-Site Development (First Stage); Facility No. 400-Site Utilities (First Stage); Building No. 302-Boiler Plant; and Building No. 202-Engineering Mechanics Laboratory, all contiguously located in Montgomery County, Maryland for the National Bureau of Standards, will be received until 2:00 PM, EST, April 19, 1961, in Rm. 7122, GSA Regional Office Building, 7th & D Sts., S. W., Washington, D. C., and then publicly opened in Rm. 3019 at the above address. On or about March 10, 1961, bidding material will be available at Rm. 1308, General Services Bldg., 19th & F Sts., N. W., Washington 25, D. C., Phone EXecutive 3-4900, Ext. 2397. Upon request, general contractors interested in bidding the complete project will be issued 3 sets of drawings and specifications without a deposit; 3 additional sets may be obtained by depositing $150.00 per set. One set of drawings and specifications will be supplied to each principal subcontractor, as determined by the Service, upon receipt of deposit in the amount of $150.00. Deposits will be refunded for sets if returned in good condition within 20 days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builder's exchanges, chambers of commerce and other similar organizations with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings, General Services Administration.

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OFFICIAL PROPOSALS

ELECTRICAL ENGINEER

24 Month Contract on Transmission Lines and Substation Construction in Thailand

Interesting opportunity for graduate Electrical Engineer with a minimum of five years experience on steel tower transmission line and substation construction. To supervise and inspect construction of a 230 KV transmission line and the installation of circuit breakers, shunt reactors, synchronous condenser and protective equipment for 69 and 230 KV substations.

Applicants must pass physical examination and security investigation.

Submit complete resume to:

SVERDRUP & PARCEL
AND
ASSOCIATES, Inc.
Engineers—Architects
915 Olive St. St. Louis 1, Mo.

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• POSITIONS VACANT

Construction Supervision. Construction engineer for inspection and supervisory work on electric power lines and substations. Opportunity for permanent employment and advancement with well-known consulting engineering firm. Send resume to P-6005, Engineering News-Record.

Soils Engineer. Graduate Civil Engineer with field experience in foundation investigation, testing, and laboratory management. Will supervise field exploration and soils laboratory testing for highway construction. Required to analyze field information and test data to develop design criteria and recommend construction technique. Salary, to be negotiated depending on experience. Location, Intermountain West. P-6187, Engineering News-Record.

Structural Engineer-Midwest consulting firm seeks Ph.D. to design complex steel structures, reinforced and prestressed concrete. Preference will be given to applicants with practical experience. Permanent position with established firm in business since 1929. Moving expenses paid. Send resume, including education, experience, and personal qualifications to P-6245. Engineering News-Record.

• POSITIONS VACANT

Electrical Engineer familiar with electric power systems. Permanent employment with opportunity for advancement in long-established consulting engineering firm. Write or call Stanley Engineering Company, Muscatine, Iowa.

Estimator—Capable and experienced estimator for work with medium sized general contractor. Minnesota location. P-6151, Engineering News-Record.

Civil Engineer with highway design experience. Send Resume, salary required to Louis Berger & Associates, 177 Oakwood Avenue, Orange, New Jersey.

Senior Water Supply Engineers with broad experience in design and/or supervision of construction of municipal water systems including treatment plants, pumping stations, distribution networks. Positions available New York City and overseas. Base salaries $11-14,000. For overseas positions salary differential and maintenance allowances to be added. Send complete resume and salary requirements to P-6119, Engineering News-Record.

Assistant Director of Public Works. New created position. Salary open. College Graduate in Civil Engineering, 2 years experience municipal engineering. Must qualify for State of Washington registered Professional Engineer license. Closing date March 31, 1961. Apply City Manager's Office, City Hall, Walla Walla, Washington.

General Superintendent:—A Leading West Coast Contractor has an opening for a top man with 15 years or more experience in highway, irrigation and earthfill dam construction. A portion of this experience must have been in the Western States. Applicant must have been part of a construction company management team during recent years. Responsibilities will include administration of all field operations, personnel and equipment, and collaboration on all estimates. Salary is open—excellent opportunity for the right man. P-6261, Engineering News-Record.

Principal Civil Design Engineer. Pacific N. W. office of national firm has senior supervisory position for grad. registered professional engineer with ten to fifteen years experience, in design of hydroelectric projects. Arch dam structural experience is desirable. Send resume to R. W. Beck and Associates, attention of Norman R. Carson, 1500 Tower Building, Seattle, Washington.

Sales Engineer. Promotional work with Architects, General Contractors and Government Agencies, for development sales of well-known, patented, Honeycomb constructed doors and panels. College graduate preferred, with allied experience. Write fully. Intercoastal Door Corp., 4-05 26th Ave., Long Island City 2, N. Y.

Superintendent for Heavy Construction. Culvert, pipes, deep trenches. Please write: 115 South Haven St., Baltimore, Md. giving full resume or call Broadway 6-6920.

Engineering—Chief of Party for Highway Layout and Construction at Utica, N. Y. Project Engineer, P. O. Box 134, Utica, New York.

Construction Supervision needed for 1-2 year project in Caribbean area. Minimum of ten years experienced in chemical plant or refinery construction. Knowledge of Spanish essential. Forward resume of experience together with present salary requirement and availability date to: T. F. Howard, Girdler Corporation, P. O. Box 171, Louisville 1, Kentucky.

Director Public Works. Central Conn. Replies confidential. Salary $9500 to $10500. Send resume P-6301, Engineering News-Record.

(Continued on page 132)

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE

The advertising rate is $45.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

**MARCH 23RD
ISSUE
CLOSES
MARCH 13TH**

UNDISPLAYED RATE

$2.70 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take 1/2 of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36

ENGINEERS DESIGNERS

McKee offers permanent career opportunities to individuals qualified by experience to undertake the design of:

**Steel Plants
Sintering Plants
Pelletizing Plants
Refineries
Chemical Plants
Petro-Chem Plants**

Remuneration commensurate with experience and ability.

Reply in confidence to:

G. VICTOR HOPKINS

Arthur G. McKee & Company

2300 Chester Ave. Cleveland 1, Ohio

HIGHWAY ENGINEERS-DESIGNERS

Experienced in location studies, reports and detail design for major highways.

Submit complete resume of education and experience.

BUCHART ENGINEERING

**55 S. Richland Ave.
York, Pa.**

Electrical Engineers and Designers

Several openings available for electrical engineers and designers experienced in powerplant (preferably hydro) design. Salary commensurate with experience. Please send complete resume to Personnel Manager

**HARZA ENGINEERING COMPANY
400 West Madison Street Chicago 6, Illinois**

RESEARCH MANAGER

MS in sanitary or chemical engineering with 7-10 years experience in water and waste treatment field to direct research and development program. Will ultimately supervise laboratory and pilot plant staff of 15 to 20. Will be responsible for coordination of program within own division and with other divisions of the corporation.

Excellent growth opportunity for creative, energetic scientist with progressive company. Send resume with salary requirements to:

P-6161—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONSTRUCTION ACCOUNTANT

Permanent position for grad. accountant with 3-5 years construction accounting experience.

P-6211, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

APPRAISAL ENGINEER

We seek a highly competent individual who has an interest in, and aptitude for, making valuation and appraisal studies covering all or a part of the assets of a corporate entity.

The work involves specialized knowledge in the field of corporate purchases, mergers, consolidations, sales, condemnations, severance damages, depreciation, mortgages and property record systems.

Applicant should possess a minimum of 10 yrs. exp. in the responsible handling of a substantial variety of valuation and appraisal functions.

Formal education should include a college degree in engineering supplemented by a working knowledge of accounting and statistics.

Salary commensurate with qualifications. Submit complete resume in confidence.

P-6209, Engineering News-Record
Class. Adv. Div., P.O. Box 12,
N.Y. 36, N.Y.

CONSTRUCTION SUPERINTENDENT

Heavy, highway and street construction. Location—Southern New York State. Civil Engineering Degree preferred. Chance for advancement with growing firm.

P-6162—Engineering News-Record
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y

HELP WANTED

We are General Contractors who have been in business for thirty years in Western Connecticut doing about ten million dollars worth of work annually in highway, bridge, dam and sewer construction.

Last September we opened a "Building Division" which we expect to expand to the same dollar volume of business in the next few years.

We need a man immediately to work under the Vice President of this division in the capacity of take-off man, estimator, project manager, and field engineer who has the ability and the attitude to grow with the company. Send complete resume of education, positions held, salary requirement, availability and references with a recent snapshot to **Oneglia & Gervasini, Inc., Casson Avenue, Torrington, Conn. in attention of George F. Mahoney.**

Editor Wanted
Highway Engineer
Who Can Write

A responsible position is open with a fast-expanding magazine publishing house—for a civil engineering graduate with proven ability to write articles on highway work. Must have state or county highway department experience. You'll probably need to be 30 or older to qualify.

Job entails field reporting, convention coverage, leading to key position in editorial management. Give us full details on yourself, including salary wanted. Your letter in confidence. Our staff knows of this opening. Address:

P-6210

Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

Designers
STRUCTURAL

Minimum 3 years experience
in structural steel design

FOR INTERVIEW CALL
Personnel Manager
WA 4-8282, NYC
OR MAIL DETAILED RESUME TO:

AMMANN & WHITNEY
CONSULTING ENGINEERS
Room 800, 111 8th Ave, NYC

EMPLOYMENT OPPORTUNITIES

• POSITIONS VACANT

(Continued from page 130)

Assistant Engineer—City of Little Falls, N. Y. Salary Range $5,096 to $5,660. Capable of performing engineering duties in connection with municipal public works program. Civil Service examination to be held April 29th, 1961. Last date for filing March 29th, 1961. Applications and information may be obtained from Margaret M. Nolan, Secretary, Municipal Civil Service Commission, City Engineer's Office, Little Falls, N. Y.

Structural Engineer for prestressed concrete products company in Wisconsin. To do product design and development, requires thorough knowledge of structural engineering, ordinary reinforced, and prestressed concrete. With the anticipated growth of our engineering department, this man can advance to an administrative position as head of the department. Send complete resume and salary requirement. P-6296, Engineering News-Record.

Sanitary Engineers—Florida Location. Experienced in water and sewerage projects—design, specifications, reports—for assignment as Project Engineers with A & E consulting firm, two openings. One applicant may be selected as production chief in sanitary engineering. Plant design experience essential. Send complete resume on experience, references, salary requirements and availability to: P-6295, Engineering News-Record.

• POSITIONS WANTED

Executive Female: 15 yrs exp all phases genrl const., efficient coordinator, administrator, mgr, atty, govt contracts, claims. PW-5887, Engineering News-Record.

Construction Superintendent Available immediately 30 years experience in all type of heavy construction. PW-6135, Engineering News-Record.

Purchasing—Heavy Construction. Wide experience material & equip. procurement, setting up procedures & office mgmt. missile base & other state & fed. work. PW-6158, Engineering News-Record.

Const. Supt. age 42. 20 years experience in all types Bldg. Construction. Available for travel. PW-6142, Engineering News-Record.

Professional Civil Engineer, A.B. and M.S. in C. E. Age 35. 11 years top experience with consultants in highways, structures, airports, and traffic. Significant achievements in supervision, planning, development, design, liaison, and engineering reports. Desire new position with responsibility and potential. PW-6255, Engineering News-Record.

Const. Supt.-All phases of grading and bridge construction, state and federal projects. Complete job management. PW-6254, Engineering News-Record.

Sodding Foreman—long experience have own sod cutting machine salary basis or piecework travel any where. PW-6196, Engineering News-Record.

Construction Superintendent—over 30 years experience all types road construction and paving. PW-6192, Engineering News-Record.

Former Consultant, adequate capital, extremely productive, 55, seeks association with established engineering organization, New York City or Miami area. PW-6197, Engineering News-Record.

Construction Supt. General Construction. PW-4482, Engineering News-Record.

Senior Engineer and Inspector-Exceptional background in inspection, expediting and material control work on multi-million dollar projects-foreign and domestic. Inspections in over 500 major U. S. manufacturing plants utilizing up-to-date techniques including x-ray, magnetic particle and electronic devices. Available on contract or salary basis. Take complete charge material coordination, inspection and/or expediting or available for supervisory position on foreign construction projects. L. E. Parker, 666 No. Terrace Ave., Mount Vernon, New York.

Superintendent-20 years experience on sanitary and storm sewers. Capable of complete charge. Prefer Northeast. PW-6239, Engineering News-Record.

Civil Engineer-Age 36-12 yrs experience-field eng'g & supervision thru estimating, negotiating, sales & administration-primarily for major foundation subcontractor. Desire position with future. Will relocate. Immed. available. PW-6249, Engineering News-Record.

• POSITIONS WANTED

Civil Engineer-12 years experience in consulting sanitary engineering field. Capable of assuming responsibility for design, plans, specifications and administration of water and sewage works projects. Desires responsible position in consulting or other field. PW-6232, Engineering News-Record.

Construction Manager, Registered Civil Engineer, mature, broad experience in estimating, bidding, contract negotiation, organization, administration, operation, and closeout of large construction projects, domestic and foreign. Expect to complete present assignment June 1961. Desire connection with large volume construction organization, preferably one doing business in southern or southwestern United States, but will consider foreign assignment. Detailed experience record and references furnished upon request. PW-6234, Engineering News-Record.

Construction Manager-Estimator-C. E.-age 40. Experienced as manager of commercial, industrial and heavy construction from bid to completion. Available. Will relocate, travel, invest. PW-6227, Engineering News-Record.

Master Mechanic, Eqpt. Supt. or Service Manager twenty-five years as supervisor of repairs, maintenance and operation of heavy equipment. Best of references, available immediately. PW-6243, Engineering News-Record.

Asst. Proj. Mgr., BCE, PE 10 yrs. exp. highways & housing, G. C. and Engrs. NYC area. Desires work where ability and drive will be utilized. PW-6222, Engineering News-Record.

Maintenance & Construction Supervisor—Oil refineries & petro-chemical plants. 23 years experience—mostly foreign. Speak Spanish. PW-6269, Engineering News-Record.

• POSITIONS WANTED

Foreman, excavating, grading, pipe drainage. PW-6224, Engineering News-Record.

General Project Manager & Contract Administr. 22 yrs. heavy constr. major projects U. S. & O. S. negotiations to completion. PW-6292, Engineering News-Record.

Bldg. Const. Engr, B. S. Rensselaer Poly. Inst. 1953. Available about April 16, 1961. Four years military const. experience. Presently Plant Engr cement plant. Silo const. experience. PW-6273, Engineering News-Record.

BCE/MBA—28—Do you need a young aggressive administrator who has experience in EDP and sound managerial decision making. PW-6298, Engineering News-Record.

Steel Sales Engineer—Reinforcing, structural, misc. steel building products. Experienced in management, sales, estimating, design, engineering. Graduate, registered; age 39. PW-6268, Engineering News-Record.

Superintendent—Specialist from A to Z in Sewer and Water line const. 20 yrs. Exp. Will prove ability before salary. Travel anywhere. P. O. Box 464, Carlisle, Pa.

Engineer with extensive urban highway and transportation experience desires association with architect, engineer or other firm engaged in city planning. PW-6294, Engineering News-Record.

Proj. Eng., B. S. C. E., 31, 8 yrs. heavy const. exp. Desire challenging position with a future. Relocate anywhere. PW-6300, Engineering News-Record.

Civil Engineer, BSCE, PE, Age 38, 15 years highway experience. Desire southern location. PW-6302, Engineering News-Record.

SEARCHLIGHT SECTION CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured 7/8 inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.70 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

STEEL FORMS
For Sale

160 L. F. Collapsible Steel Forms for 6' wide x 6'-6" high concrete box construction on storm drainage, heating tunnels, etc. Excellent condition. Engineered and fabricated by Blaw-Knox. Permit monolithic pouring sidewalls and roof slab, release of inside and outside forms while still maintaining support to roof slab.

M. A. BONGIOVANNI, INC.
P.O. Box 147, Colvin Station
Syracuse, New York GR 5-9937

FOR SALE or RENT
New MARION TRUCK CRANE

25 ton capacity, 60' boom,
price below cost.

FURNIVAL Mchy. Co.
Phila. TRinity 7-5200

ALL STEEL TUNNEL FORMS

40' L.F. (2-20' units) non-telescopic forms. 11'-0" dia. 3/4 round adjustable to 10'-0 and 9'-0. With built-in jumbo travelers.

30' L.F. (2-15'0 units) non-telescopic forms. 9'-0" dia. 3/4 round adjustable to 8'-0 dia. With built-in jumbo travelers.

LOMBARDO BROS. CONSTRUCTION CO.
3600 Ridge Rd. Cleveland 2, Ohio ME 1-7100

• BUSINESS OPPORTUNITY

P. E. & L. S. (N. Y. State): Fellow A. S. C. E. Interested in purchasing all or part of established Eng. and/or L. S. business from owner wishing to retire or become less active. New Eng. or Middle Atlantic states. BO-6297, Engineering News-Record. Classified Adv. Div., P. O. Box 12, New York 36, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
Write today without obligation
WILSON *Engineering Corp.*
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

CONSTRUCTION SUPERVISION

Exclusive Training Course by mail for top positions. Publishers Manual of Advanced Construction Management. Send postcard for details.

National Schools of Construction
Est. 1952
Satsuma, Florida

FOR RENT

Manitowoc 3000 serial number 30120 new in 1956. 50 ton capacity, diesel torque, 18 foot 4 inch crawlers, 110 foot boom, 30 foot jib, independent swing.

PARKER PARKINSON, INC.
Thorofare, N. J. — TI 5-5200

The following equipment is FOR SALE at our yard and subject to prior sale.

Southern Engineering & Construction Corp.
P.O. Box 484, Richmond, Virginia.
Telephone EL 8-0751

1—#12 Cat Motorgrader (new condition)
1—New Hough HU Payloader w/ Drott bucket
1—Shield Bantam Truck Crane 5T-30' w/ backhoe
1—#44 Barber Green Ditcher 18" x 7' (new condition)
1—50 H.P. 2 Drum O.K. Hoist
7—Mod. N50 Getman Scootcretes
8—Mod. 1200 Silent Glo Heaters
1—D8 Cat Tractor w/ Cat 25 power unit
1—12cy LeTourneau Pan LP
1—Winslow Bin-Batch
1—105 I.R. Compressor
7500 sf New Type Universal Forms w/ accessories

FOR SALE or RENT

13—LW "B" Tournapulls
3—LW "C" Tournapulls
2—LW Tournatractors

FURNIVAL Mchy. Co.
Phila. TRinity 7-5200

High Speed in 6x6's
NEW ISSUE TRUCKS
GMC! MACK! REO "Eager Beaver!"

- *Tandem Axle*
- *Front Wheel Drive*

For specifications, prices, delivery, write

MEMPHIS EQUIPMENT COMPANY
P.O. Box 2852, Dept. E., Memphis, Tenn.
NATION'S LARGEST ARMY TRUCK DEALER!

For Sale: **DRAGLINES—SHOVELS—CRANES**
All makes and models, ½ yd. to 35 yd.
EUCLIDS: Rear, Bottom Dumps and Scrapers
Other equipment available not listed above
William Lubrecht, III Construction Equipment
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Gladstone 5-4041 5-0253

HEAVY EXCAVATION EQUIPMENT

LARGE DRAGLINES, SHOVELS, CRANES, ROTARY DRILLS, EUCLID DUMP TRUCKS

FRANK SWABB EQUIPMENT COMPANY, INC.
Hazleton National Bank Building, Hazleton Pa.
Phone GL 5-3658

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Current Models Sale or Rent
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R. T. SHERROD
Concrete Equipment Company
Jones Island, Milwaukee 7, Wis.

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Good USED Equipment

is frequently the diffference between having needed equipment or doing without it.

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VULCAN AND McKIERNAN-TERRY
Steam Pile Hammers and Extractors

- DROP HAMMERS
- DRIVING CAPS
- HOISTS AND BOILERS
- STEEL LEADS
- PILE DRIVER HOSE
- STEEL SHEET PILING

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DRexel 1-3930
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KANSAS CITY, KANS.

FOR SALE

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1952 White Truck, Model WC22WT, with oil field bed, air brakes, tires, 10.00 x 20, front and rear
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1955 Oliver, OC-3, Tractor, w/ sideboom
1955 Cleveland 95 Ditching Machine
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Allis Chalmers, HD11F Tractor, with TSB11 sideboom (approx. 1,800 Hrs. operation)
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PIPE SUPPLY CO. INC.
Seamless and Welded Steel Pipe
Fittings, Valves, Pipe Fabricating
Call GEdney 9-6300
50th St. & 2nd Ave., B'klyn 32, N. Y.

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BEARING
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AND
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KOEHRING 34E PAVER
31,000 Batches. Used 3 Months
JOHNSON BULK CEMENT PLANT
BC-1 Single Silo S/N 60509
with Unloading Equipment
JOHNSON CHARGER TY 320
S/N 60332-1 (Nearly New)
TOURNAROCKER E-18
S/N TR 2806
REX SPREADER
Near New—Used 3 weeks
20'—25' S/N DA 135
KOEHRING 405 DRAGLINE CLAMSHELL
Used One Year

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DUAL DRUM PAVER

Ransome Model 34E w/Hercules HXE gas engine. Totally rebuilt. Inspect in our yard. Call or wire collect.

M-W EQUIPMENT CO.
Hunting Park Ave. & Fox St., Phila. 29, Pa.
BAldwin 6-2600

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For Sale, Wanted or Rent

STEEL SHEET PILING by DIALING
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FAST SERVICE
NATION-WIDE STOCKS
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ALL SECTIONS

PILE DRIVING EQUIPMENT
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MISSISSIPPI VALLEY EQUIPMENT CO.
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H & SHEET STEEL PILING

1400 PCS. BP8, BP10, BP12—BP14—55' to 60'
3700 PCS. BETH. SP6A, 50', 56' & 48' & 40' & 35'
1900 PCS. MP112—12', 25', 35', 40' & 60'
2800 PCS. BETH.—AP3 20', 25', 30', 35' & 60'
2500 PCS. BETH.—DP2—31', 35', 40', 50', 60'
1200 PCS. ZP38-ZP32—25', 36', 50', 65' & 77'
600 PCS. BETH. ZP27—25', 30', 50' & 60'
500 PCS. 10' & 15' Corrugated Piling

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
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12—Gen. Elec. 100, 80, 65, 45, 25, & 23 ton
25 Ton Industrial Loco Crane, 60' Boom

3600' JOY ELEC AIR COMPRESSOR
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Sewage treatment, sewers, storm drainage, flood control—Water supply and treatment—Highway and bridges—Airports—Urban renewal—Electric and gas transmission lines—Rate studies, surveys and valuations—Industrial and institutional buildings.

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Professional Assistance

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OL 3-6787

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Editorials

Profits and Contracting

For the past two busy years the principal problem of the construction contractor has been inadequate profits. By and large his complaints on this score have been justified, but his efforts to end his servitude to the disease of "profitless prosperity" have not always measured up to his opportunities. To avoid continuing damage to his business health he needs first to understand what he's up against, and then to act on his opportunities for corrective action.

Gov. John Volpe of Massachusetts deplored the disease of inadequate profits during his 1960 term as president of the Associated General Contractors; Clare Miller, AGC's new president, says it is still construction's No. 1 problem (p. 86). Our own annual forecast (ENR Jan. 26, p. 43) stressed the need for profits as the task for '61.

Volume; we have. Last year was a record breaker, this year will beat it.

Competition we have also. Eight bidders per contract on the Interstate Highway System; bids coming in quite consistently under estimates.

Costs keep going up. Construction labor added 14.8 cents per hour to its wage in '60 and will add another 15 cents in '61—plus fringe benefits. Construction equipment prices are expressed by a Department of Labor index that was 137.1 in 1955, 177.0 in 1960. Construction materials prices have stabilized in recent months, but historically they keep rising.

Yet prices of certain construction are actually coming down. The Bureau of Public Roads' composite mile bid index dropped from 143.4 in 1957 to 135 in the last quarter of '60. BPR now estimates it will cost one whole billion dollars less to construct the Interstate system than was thought possible in 1957.

This would be great if we could say all the savings to purchasers of construction were coming out of productivity, careful management, smart buying, brilliant engineering, clever methods. But we can't. Some of these savings to the buyers of construction are coming right out of contractors' profits.

That contractors are too often going profitless is evident in the failure figures—2,607, both large and small, went broke last year, setting a new record. Big firms, who announce their earnings, reported decreases last year. And most of those who report profits complain that the margin is perilously slim.

Obviously it's time that this two-year siege of profitless prosperity was brought to an end. Which means that it's time for a return to the basic principles of sound management. Constructors must:

- Adopt a system of proper pricing, basing a reasonable markup on sound estimating of all possible costs.
- Carefully measure and control costs while the job progresses.
- Not bite off more work than can be chewed.
- Learn to appreciate the costly inefficiency of operating rundown equipment, to be positive about maintaining equipment while it's productive, and about replacing it when it is not.
- Eschew the methods that are more costly, and urge more engineers to specify end-results in order to give the imaginative builder a chance to try a different, cheaper way to achieve the same thing.
- Teach management to supervisors, and apply the latest management techniques for planning, directing, measuring and controlling construction operations.

In short, it's time to quit bidding off the top of the head and building by the seat of the pants. Otherwise, two years of profitless prosperity will extend to three, and the failure figures will continue to mount.

Facing Road Facts

President Kennedy has given Congress a blueprint of a method that will assure the nation the roads it needs. The blueprint is based on the basic specification—noted on this page repeatedly—that a cutback in the Interstate system construction program is unthinkable, and that it can be avoided only by getting more money for the Highway Trust Fund. If the program is to be kept on a pay-as-you-go basis—and on this the President is adamant—the money must come from additional user taxes (ENR Mar. 2, p. 22).

The blueprint pinpoints these taxes with as much logic and fairness as it seems possible to bring to bear on the problem. Whether the owners of big trucks, on whom the bulk of the new taxes would fall, can prove otherwise remains to be seen. Obviously they will try, as is definitely their right. Probably they will be joined by the petroleum industry, which has the unpleasant and unprofitable task of collecting fuel taxes as a part of the price of its products. And it may well be that groups representing the passenger car owners will plug for a three instead of a four-cents-a-gallon gasoline tax.

Until counter arguments are heard, however, the Kennedy blueprint is persuasive. Diesel fuel has long had a tax advantage over gasoline; under the proposal the two fuels would be more nearly on a par. The Ottawa road tests gave a new insight into the increased highway costs that must be incurred to permit safe and efficient operation of heavy trucks; in fairness the benefits should be paid for by the recipients.

No taxing proposal is ever going to be greeted with enthusiasm. But facing road facts realistically, some proposal must be adopted. President Kennedy has made one. Congress can reject it, but it must then come up with another. For, as the President says, the nation must not fail to keep the Interstate system construction on schedule in the interest of both the economy and the national defense.

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